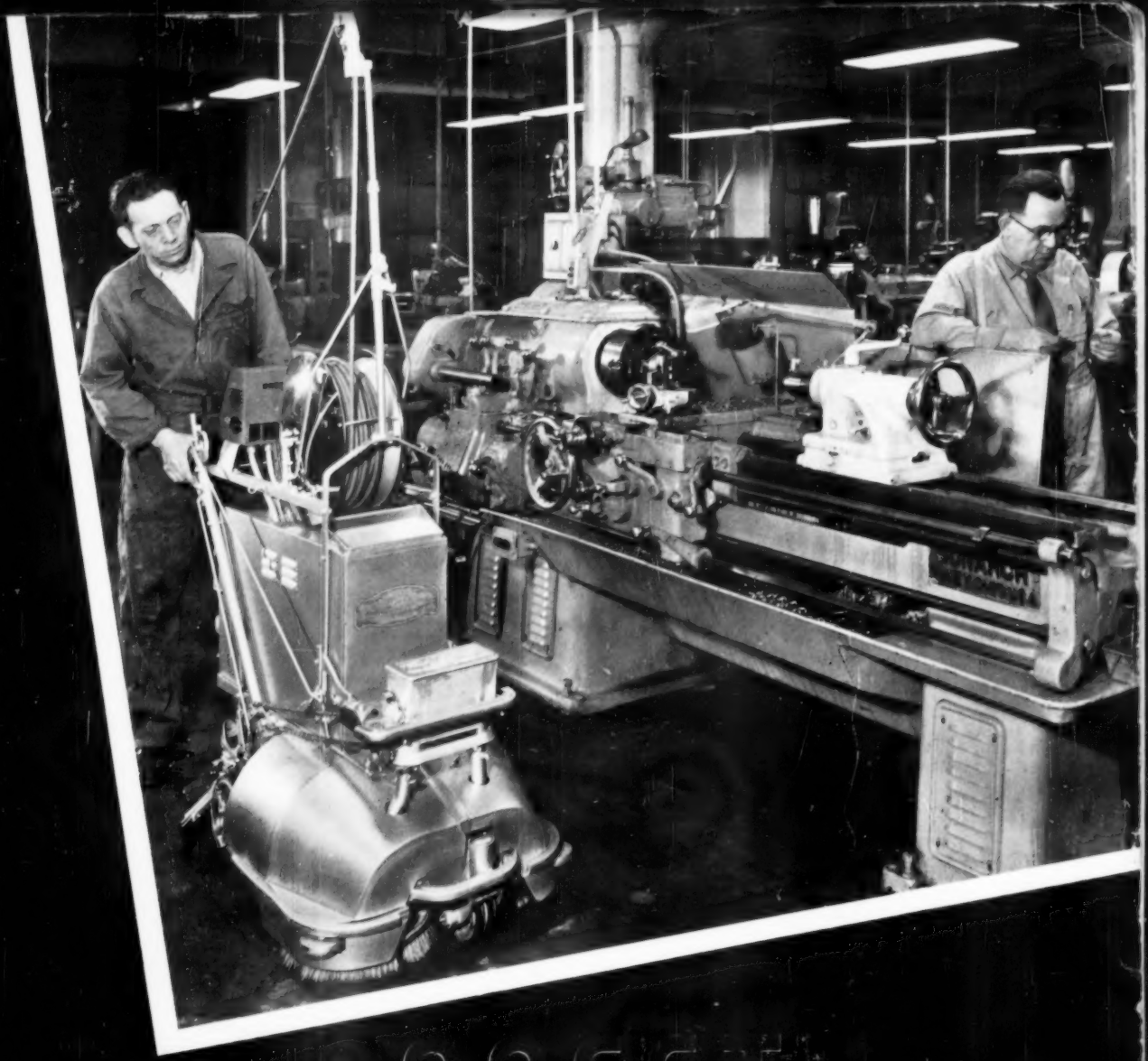

Safety maintenance & PRODUCTION

FORMERLY SAFETY ENGINEERING

WA
PAG

AO R9100 TYPE RESPI

The low cost of this BUREAU OF MINES APPROVED Resp
appealed in dusty operations where a soundly made respirator of simple construction is adequate.

The R9100 protects against *pneumoconiosis-producing* and *nuisance dusts* such as aluminum, borax, carbon, cement, charcoal, coke, flour, glass, grain, graphite, gypsum, limestone, pollen and wood. The companion respirator R9100T should be specified for protection against dusts that are not significantly more toxic than lead, such as barium, cadmium, lead arsenate, manganese and organic dusts—also for protection against DDT and insecticide sprays of similar potency. BUREAU OF MINES APPROVED numbers are BM 2137 and BM 2144 respectively. Your nearest AO Safety Products Representative can supply you.

resistant valve does not stick, is out of way. Easily replaceable.

- Lightweight (1½ oz.) for comfort. Soft rubber, smooth edges, self-adjusting double headband.
- Unobstructed vision—fits close to face, may be worn under helmet or with goggles.
- Easily cleaned — a shake, slap of the hand or light blast from air hose removes dust.

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

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10361

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ANCHOR FLANGE*
WINGUARD 400

for Dress Shoe Smartness and Complete Toe Protection

Today, more than ever, workers are demanding *STYLE* in their safety shoes. These two smart numerals and others made with new anchor wingguard 400 steel box toes are as good any dress shoes. They assure invisible perfect comfort.

AVY
GES

H401
Men's Brown Side Moccasin Type Loafer, Lined Quarter, Weatherwear Sole, Half Rubber Heel.
A,B • 7-12
C • 6-12
D,E • 5-12
A-E • 13

H407
Men's Brown Side "U" Wing Blucher Oxford, Lined Quarter, Weatherwear Sole, Half Rubber Heel.
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AA-E • 13

HY-TEST Safety Shoes now feature exclusive **BOL TAN LEATHER INSOLES** with up to twice the wear per pair

Insure Workers' Feet in Sure Protection . . .

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THE WORLD'S LARGEST SELLING SAFETY SHOE

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QUICK FACTS

- Simply constructed of a smooth, rubber face mask and a corrugated permanent felt type filter, reinforced by wire frame.
- Easy to breathe in; non-reversing, low-resistant valve does not stick, is out of way. Easily replaceable.
- Lightweight (1½ oz.) for comfort. Soft rubber, smooth edges, self-adjusting double headband.
- Unobstructed vision—fits close to face, may be worn under helmet or with goggles.
- Easily cleaned — a shake, slap of the hand or light blast from air hose removes dust.

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HY-TEST'S ANCHOR FLANGE* WINGUARD 400

for Dress Shoe Smartness and Complete Toe Protection

Today, more than ever, workers are demanding *STYLE* in their safety shoes. These two smart numbers and several others made with new anchor flange Winguard 400 steel box toes are as good looking as any dress shoes. They assure invisible protection, perfect comfort.

H401
Men's Brown Side Moccasin Type Loafer, Lined Quarter, Weatherwear Sole, Half Rubber Heel.
A,B • 7-12
C • 6-12
D,E • 5-12
A-E • 13

H407
Men's Brown Side "U" Wing Blucher Oxford, Lined Quarter, Weatherwear Sole, Half Rubber Heel.
AA • 8-12
A-E • 7-12
C • 6-12
D,E • 5-12
AA-E • 13

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Insure Workers' Feet in Sure Protection . . .

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*TRADEMARK REG. U.S. PAT. OFF.

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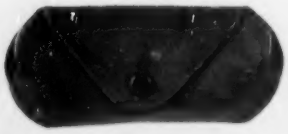

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POOR WORK
TIME AND TROUBLE
YOU CAN SAVE

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MAGIC is science's answer to foul sight. It deposits a scientific film which instantly makes goggles and glasses sparkle and preserves them crystal-clear. It's Silicone from General Electric's House of Magic that does it—and as easy as lifting your finger. Big sheets that don't tear. *Each sheet is 50% larger than usual . . . yet it costs you less.* NO WASTE. NO FLUID. NOTHING TO SQUIRT. NO CUMBERSOME CABINET OR COMPLICATED DISPENSER.

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Magic Lens Tissue

T.M. REG. U.S. PAT OFF

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Iron Age Bulletin

ALL NEW

Forecast: Strong and Safer — *Pittsburgh* — *January, 1952*

IT'S NEW—IT'S NEWS!

THE SENSATIONAL

Iron Age "Cruiser"

SAFETY SHOE

with

NEOPRENE CREPE SOLE

•

NEW AND BETTER THESE 6 WAYS

NEW KLOMP PATTERN—Built like a bulldozer yet gentle on the foot, easy on the eye.

NEW WINGUARD STEEL TOE BOX—The patented sloping wings absolutely prevent buckling under extreme pressure.

NEW MASKEDGE LAST—Eliminates the telltale contour of the steel toe's back edge.

NEW NEOPRENE CREPE SOLE—by Bearfoot. Made of thick, pure Neoprene. Best for oily conditions.

NEW PACIFATE PROTECTED LINING—by Pacific Mills. Stronger, decay resistant, more sanitary, prevents cut-throughs.

NEW ARMSTRONG CORK FILLER—An absorbent inner cushion that keeps insoles smooth—found only in shoes of the highest quality.

IRON AGE DOES IT AGAIN!

No. 625
A 8-13
B 7-13
C 6-13
D 6-13
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Here's the ne plus ultra in safety shoes. A brand new, grand shoe that can be proudly worn in complete safety by any man, on any job without conscious effort. It's called the "Cruiser" because workers "cruise along" in all-day comfort thanks to the thick cushion of pure, durable, slip resistant Neoprene crepe underfoot.

Ask your Iron Age representative to demonstrate the six big features that set the "Cruiser" head and shoulders above all other safety shoes . . . in appearance, in rugged construction, in long wearing satisfaction. Better get your stock order in now and be sure to order a pair for yourself. One look will tell you why.

Iron Age DIVISION

H. CHILDS & CO., INC.
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Bright Eyes *Stay* Bright...

when eye SAVERS stand guard!

Workers like the exclusive features of Watchemoket's TUC-AWAY goggle. Welded Retrax "telescoping" temples and change-around lens plan give comfortable fit and *sure* eye protection. Get complete details from your safety supplier or write direct.

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WATCHEMOKET eye SAVERS

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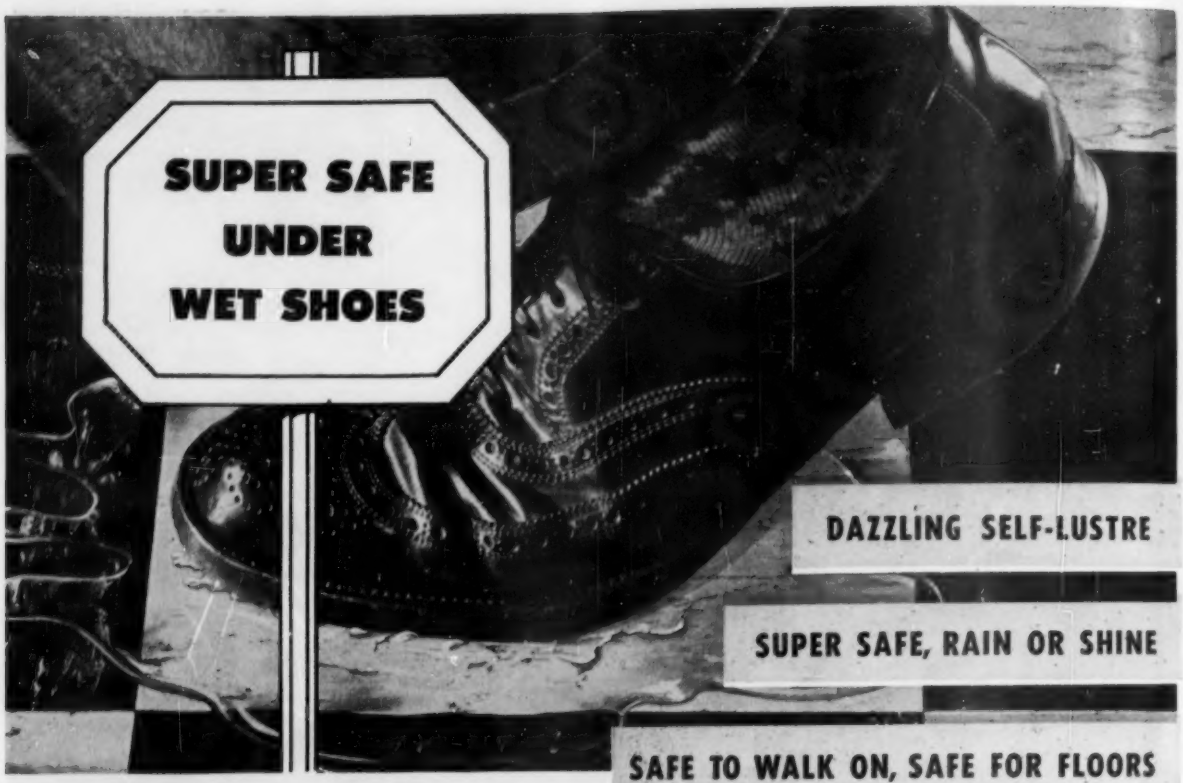

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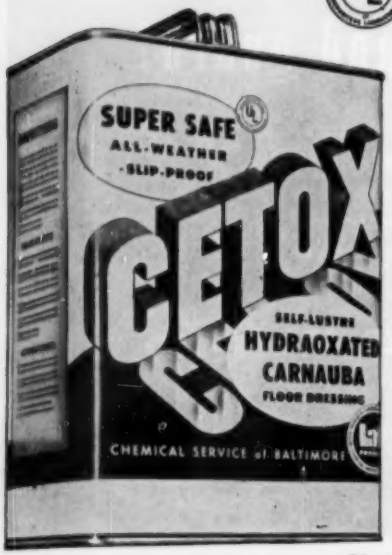
floor dressing that's extra safe all year 'round!



CETOX makes all floors super safe—especially throughout year's 30% inclement weather when the risk of slips and falls is greatest.

Super safe—even under wet shoes

Normally, water underfoot acts as a lubricant. CETOX is extra safe under spilled or tracked in water. You simply won't slip, because CETOX contains Carnauba with the slip hydraoxated out of it. No silicas, or abrasives added. *It's hydraoxated super safe!*

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Self lustre CETOX makes floors dazzling bright. It is a wet mop proof, tough wearing, dirt resisting, protective floor dressing that may readily be removed with the use of a mild detergent. In every way, CETOX is superior. For safety sake . . . put CETOX on your floors.

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Chemical Service of Baltimore

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MEMBER OF NATIONAL SAFETY COUNCIL.

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"THE *MASTER* OF *FLAME*"

ANSUL

DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT

FIRST.. in advanced engineering design and functional dependability...

FIRST.. in fire-stopping effectiveness with inexperienced operators...

Your BEST PROTECTION FOR FLAMMABLE LIQUID, GAS AND ELECTRICAL FIRES

MODEL 20-B

Ansul Dry Chemical Fire Extinguishers were FIRST with the GREATEST FIRE-KILLING RATINGS ever attained by hand and wheeled portable fire extinguishers*. No type or make of extinguisher has ever exceeded Ansul's effectiveness ratings for flammable liquid fires.

Ansul features include: 1) Patented nozzle which provides the most effective stream pattern for quick extinguishment of fires... in addition to forming a heat-shield for the operator. 2) Watertight and corrosion-resistant construction. 3) Easy, on-the-spot recharging after use without special tools . . . and many others.

Ansul *"PLUS-FIFTY"* Dry Chemical is non-corrosive, non-abrasive and non-toxic. It is safe to use on electrical fires of any voltage. And ANSUL extinguishers need only be inspected annually, NOT RECHARGED, adding ECONOMY to GREATER FIRE-STOPPING EFFECTIVENESS.

Ansul Chemical Company is the *only* fire extinguisher manufacturer maintaining extensive chemical research laboratories in addition to a large engineering staff for research and development to maintain and improve the quality of its products . . . *Plus* the most extensive, best-equipped proving grounds in the industry.

*Get the facts. See comparative effectiveness ratings for various types of approved fire extinguishers based on tests by nationally recognized approval agencies. Write for file No. 804. You will receive complete information and other valuable data.

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Happy New Year

It's Safe to Say

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★ HANDS ACROSS THE SEAS

AS EVIDENCE of the increasing concern with the prevention of industrial accidents throughout the entire civilized world, various study groups are being brought to this country to investigate American techniques in accident and industrial disease prevention.

A 12-man study team representing French industries has just concluded a visit sponsored by the Economic Cooperation Administration and with a program arranged by the U. S. Department of Labor, Bureau of Labor Standards.

The incidence of industrial accidents and diseases is a factor of great importance in the French government's program of planned productivity just as it is in the United States where stepped-up production means stepped-up safety. Long ago, progressive industrialists in France, and their government representatives, embraced the incontrovertible fact that accidents and poor maintenance conditions bring in their wake a colossal burden in suffering and reduced productivity. This burden is reflected in higher costs which in turn must be passed on to the consumer in the form of increased prices and taxes. Members of the French team came for valuable information concerning all phases of safety and it is to be expected that upon their return to France they will be able to disseminate their findings throughout the industries of that country.

Composed of doctors, safety engineers, research workers and government officials, the group hopes to overcome any lag in French industrial accident prevention development caused by the war and the Nazi occupation.

Our methods of safety propaganda for the worker came under close scrutiny by the group whose program wisely included the study of safety legislation, education, statistics and accident prevention devices found successful in the United States.

Unlike countries whose suspicion is rampant, public officials and private citizens of the United States know that safety is cooperative, rather than competitive. We are eager to demonstrate to men of good-will that American "know-how" in safety is here for the asking and represents the combined thinking and experience of Americans of every racial strain. Further, contrary to opinion often expressed in derision, we do not "know it all" but welcome an interchange of ideas made possible by such friendly visits sponsored by the E. C. A.

Greater improvement of the already splendid French safety methods and medical care in industry is expected to reduce absenteeism, protect workers, lower costs and make for a higher level of working conditions in France.

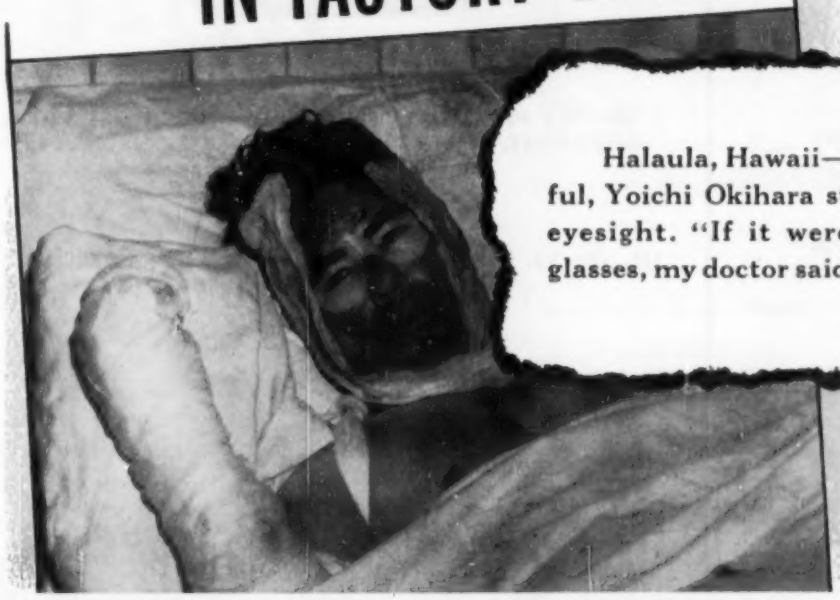
It would be a great contribution to human welfare and international waste reduction if safety leaders of other countries could be sent to the United States for an intensive tour of our factories and workshops. Their observations should be made freely available for the ultimate benefit of all mankind. Incidentally, such a program might help to dispel the illusion that Uncle Sam is a ruthless money-grubber who wickedly exploits the "down-trodden" (?) workman while leaving him ill-equipped to survive in the face of industrial hazards.

In this connection, this publication has just concluded a new survey to determine where our foreign subscriptions are destined. No less than 43 foreign countries are represented on our paid subscription list and it is a matter of more than passing interest to note that paid subscriptions to SAFETY MAINTENANCE & PRODUCTION are sent regularly to the following countries:

Alaska, Argentina, Australia, Belgium, Brazil, British W. Indies, Canada, Canal Zone, Chile, China, Colombia, Cuba, Czechoslovakia, Denmark, Dutch Guiana, England, Formosa, France, Germany, Guam, Hawaii, Holland, Hungary, India, Israel, Italy, Japan, Mexico, Netherlands Indies, New Zealand, Norway, Peru, Philippines, Poland, Puerto Rico, Roumania, Russia, Saudi Arabia, South Africa, Sweden, Switzerland, Turkey and Venezuela.

Obviously, this publication is reaching even countries and satellites behind the Iron Curtain. This is all to the good if the reader is permitted literal translations. He will then obtain at least an inkling of the blessings of American Democracy and will know the lengths to which we in the United States will go to prove that the most valuable thing in life is life itself. The conservation of that priceless commodity occupies the time, talents and energies of a vast segment of our population willing to spend great sums of money to prove our sincerity.—H. A.

SAFETY GLASSES AVERT BLINDNESS IN FACTORY BLAST



Halaula, Hawaii—Suffering but grateful, Yoichi Okihara still has his precious eyesight. "If it weren't for the safety glasses, my doctor said I'd be blind today."

1 SELL EYE SAFETY TO EMPLOYEES
Ask your distributor's representative to show you the kit of posters, pay envelope inserts, PA system scripts and other material that sells workers forcefully on *desire to use* proper safety eyewear.

2 SAFETY GLASSES FOR EACH JOB
A complete range of Bausch & Lomb safety eyewear, engineered to meet the most rigid tests for each job classification in your plant.

3 PROTECTION *PLUS* CORRECTION
For at least 50% of your workers prescription lenses are necessary to working efficiency as well as to safety. Your B&L distributor offers prompt prescription service on all types of industrial eyewear.

NEVER has a spot news picture so graphically registered results of an accident which might have been fatal. It's available to you in a clear, sharp, unretouched poster version—guaranteed to "stop" virtually everyone who views it.

Casualty companies have long agreed that a *total* eye safety program must include education of the workers by management. Let us show you this poster, along with other forceful educational material, all part of a *total* eye safety service you can implement immediately in your plant. Bausch & Lomb Optical Co., 693-13 St. Paul St., Rochester 2, N. Y.

BAUSCH & LOMB *Safety Eyewear*

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FORMERLY "SAFETY ENGINEERING"

The Magazine of Safety

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EST. 1901

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Radical new design in work shoes

Lehigh Safety "Flight Boot"

We've never seen such a reception such as this new boot has received from workmen in every plant where we've shown it. Originally inspired by the RAF flying boot, it has been widely adopted for sport and leisure wear. Now Lehigh adds the famous Lockrim* Steel Toe Box to bring new comfort, wider utility and handsome styling to the safety work shoe! Tens of thousands of men in industry who need the extra ankle-protection of a higher shoe, but who won't wear "old-fashioned" conventional styles will buy this smart 5-inch boot on sight . . . wear it for loafing and active sports as well as in the plant. See it . . . show it . . . right away!

*T. M. REG.

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For prompt safety service
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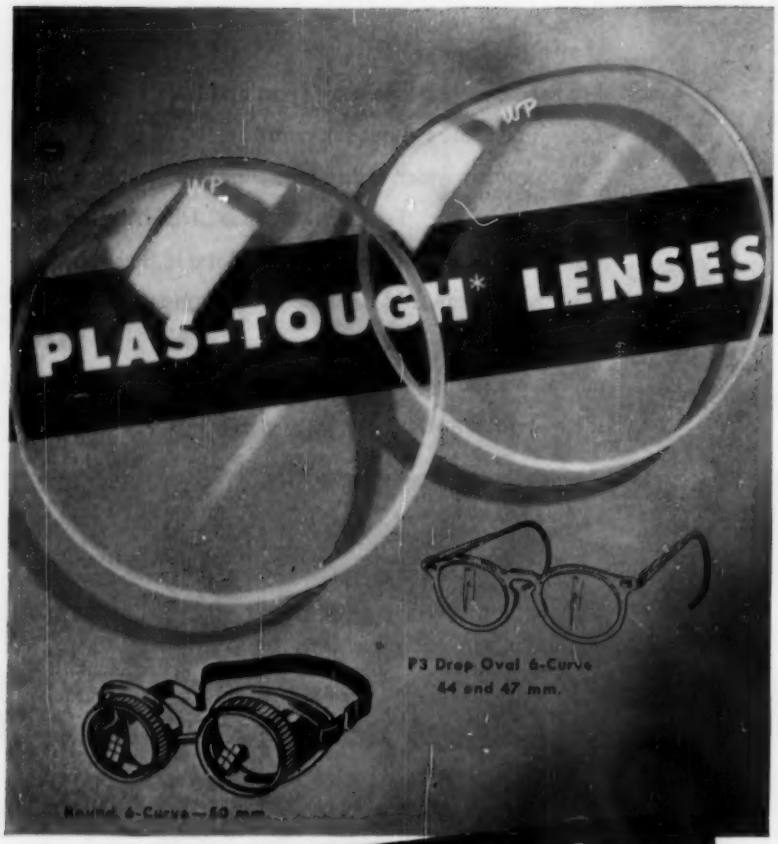

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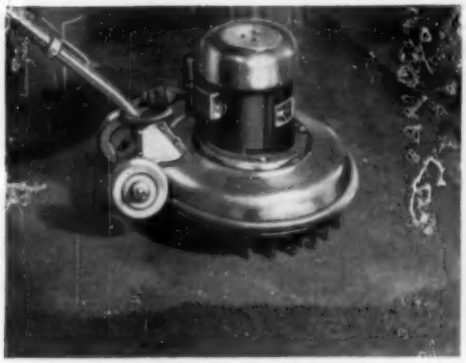

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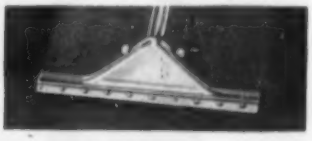

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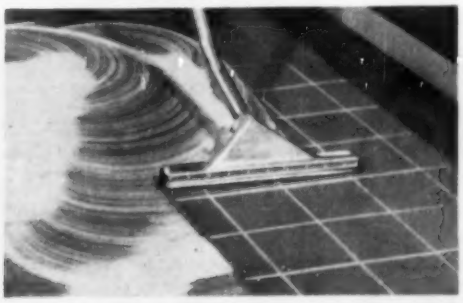

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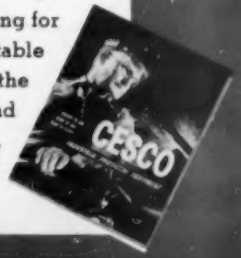

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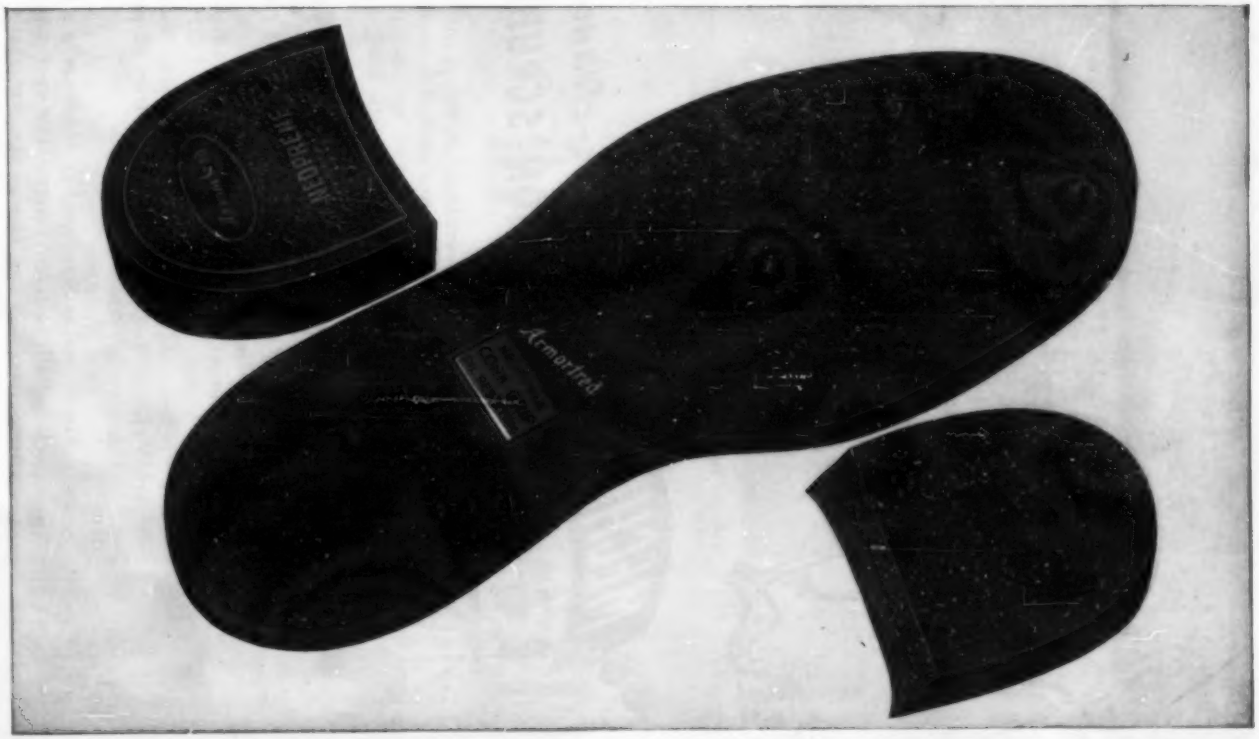

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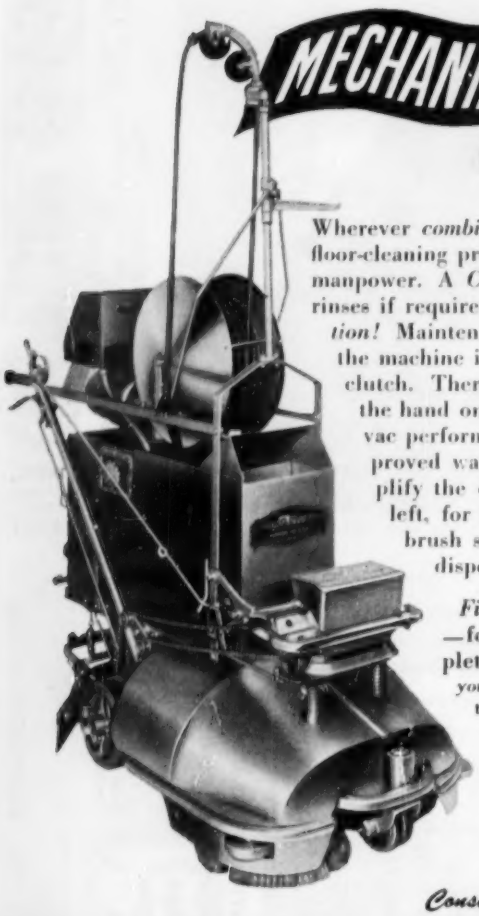

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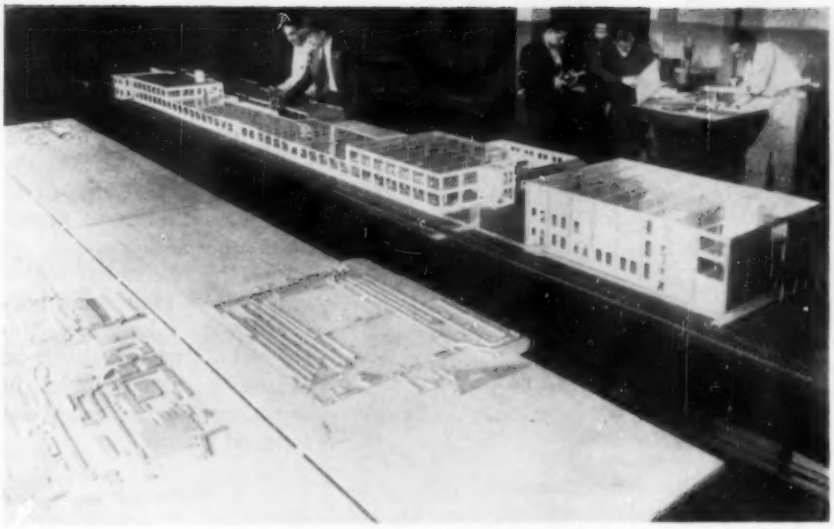


Making big problems small. By taking advantage of the use of scale models, "booby traps" in plant designs can be easily visualized and eliminated. Models of layout take the mystery out of blue prints.

SAFETY MAINTENANCE & PRODUCTION

VOL. 103, No. 1 • JANUARY, 1952

BUILT-IN SAFETY

Eliminate those safety, maintenance, and production "booby traps" by careful planning of the plant layout.

By R. W. MALLICK, Staff Engineer
Westinghouse Electric Corporation
East Pittsburgh, Pa.

SEVERAL years ago a leading insurance firm used a rather catchy slogan in its advertising, "The future belongs to those who plan for it." The phrase might be reworded with equal appropriateness to read, "Safety belongs to those who plan for it."

In the case of industrial safety, there is no better foundation for accident prevention than pre-planning it in the plant layout. If your plant is properly planned and laid out, you will have a minimum number of accidents, all other things being equal.

Most plant executives now appreciate the economic value of a good plant safety record. At one time, not too many years ago, spending money for strictly safety measures was considered a luxury. Thanks to modern statistics that thinking has changed. Today it is no longer necessary for planning engineers to temper their layouts to avoid the luxury of safety measures. Accidents cost too much to allow safety to be treated lightly in plant layout design.

Your plant layout will largely determine whether or not you are building potential "booby traps" into your plant. The following are some of the ways in which safety can be coordinated with plant engineering.

1. Plant Site

One may not think that a plant location and site have a bearing on the safety but they do. Employees must travel to and from work, and plant location may subject them to travel hazards. Due to the usually heavy influx of traffic at shift-change hours, the tendency to rush out of the plant or beat the whistle getting in are factors affecting safety. If your plant is on a busy highway or busy city street, proper plant approaches should be provided. Perhaps your plant may be situated on a terrace requiring the use of stairs or ramps. These may be hazardous during inclement weather.

One-way traffic laws should be considered in the layout of the grounds. Proper shelters for employees using public conveyances are another consideration, and also proper and adequate parking facilities. These are a few of the considerations the plant layout engineer

Plant entrance of an aircraft plant built during World War II. Note that employees are well protected from high speed highway traffic and also from the weather.

should give to safety in the plant site.

2. Entrance and Exits

A great deal of space could be devoted to the discussion of entrances and exits. Included in this category is the means of receiving and shipping, as well as provision for pedestrian traffic. In some of the older plants very little thought was given to adequate receiving and shipping facilities or to segregating them from intra-plant traffic. The heavy congestion centered in these areas is a fertile field for accidents. Industrial architects have in recent years succeeded in creating structural designs that have proved to be very eye appealing, yet functional in terms of traffic efficiency and safety. The mass production potentials of most modern plants require that materials and personnel be able to move in and out of the plant quickly, safely and economically. Some safety features to think about when planning a new layout or when changing an old one are:

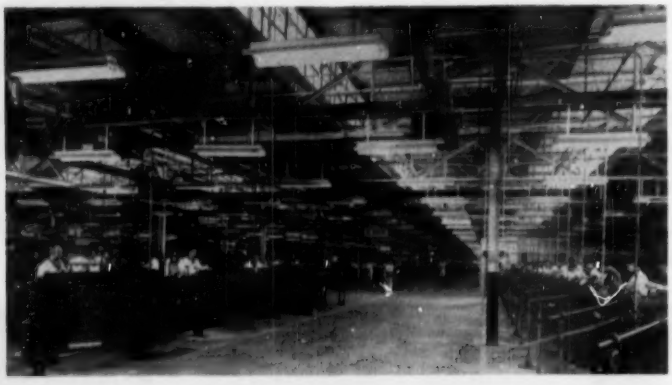
a. Wherever possible keep rail, highway truck, industrial truck and pedestrian traffic separated. Where this cannot be done, plan the movement in such a manner as to avoid possibilities of collision.
b. Avoid sharp turns, grades, blind spots, intersections, cross-overs, congested points and similar "built in" hazard potentials.
c. It is better and safer to eliminate by good planning and design any potentially unsafe work conditions than to alleviate the hazard later by some "protective means." To this end, the use of three-dimensional models is a worthwhile aid and will be discussed at greater length later.
d. Where the volume of traffic is heavy, receiving and shipping departments should be designed with depressed docks or elevating platforms to permit loading and unloading of carriers by mechanical means at floor level. Proper clearances between the sides of the vehicles and obstructions should be observed. Statutary codes in some instances are too liberal for good practice.

3. Walkways

The all-important elements making up this heading include aisles, stairs, elevators, floors, ramps and obstructions.

Aisles—Factory aisles, particularly the main traffic aisles, should be of generous width, as straight as possible and completely free of obstructions. Where possible, corners should be cut off on a diagonal and visibility should not be obscured. If vehicles must pass in the aisle, the latter should be at least twice the width of the widest part of the vehicle or load, plus another three feet if the aisle is also used by pedestrians. If the traffic is not heavy, the aisle can be of a width equal to the maximum width of the vehicle or load, plus two feet, provided passing zones are established at intervals of from 150 to 200 feet.

Up and Over—This two level traffic aisle offers protection to pedestrians and a clear passage for the factory trucks and carts.



Note the wide traffic aisle, high intensity lighting, and general orderliness of this machine shop. Plants of this kind result from good planning. As a direct result, safety is much enhanced and maintenance is both simpler and more effective.

One-way traffic aisles are receiving increased attention in industry and should be encouraged. Look at what

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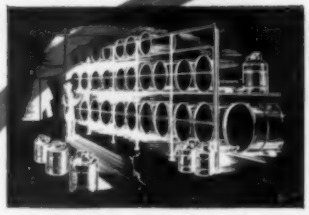

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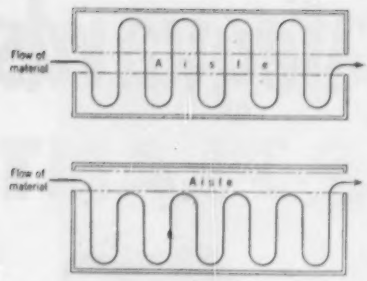

Center vs Side Aisles—the above drawings illustrate the movement of materials through factory buildings, one having a center aisle, the other a side aisle. With a center aisle, the hazard potential is increased due to need for crossing the aisle to reach bays.

they did to help traffic conditions in our cities.

The aisle should be marked by lines of suitable width and color. Permanent markers such as metal disks are also suitable. The floor surface should be free of any deformations, and kept clean at all times. The surface material should be suitable to the needs of the traffic loads transported. The aisles should be well lighted and, if not lighted at night by general lighting, should be illuminated by night lights for the benefit of service employees or off-shift workers. If the aisles are designed as emergency passways, they should be marked by regulation exit markers.

Since aisles are the main arteries for the movement of men and materials they should not be looked upon as luxurious use of valuable floor space. They are as much a facility as any material-handling device in the plant and should be given at least the same consideration. As a final note, don't layout your main traffic aisles in such a manner that persons or vehicles approaching the aisle from doorways or side aisles are exposed to possible collision. Keep doorways and approaches recessed, and junction points free of obstruction to traffic view.

Stairs—Stairs are always a potential hazard. Someone once remarked that there has been no improvement in the design of stairways in 5000 years. This is perhaps sardonic for we do have electric stairways which have a remarkable safety record. However, the point is well taken for the safety of stairways is a problem. Wherever possible it is best to eliminate them. When this is not feasible, they should be designed for a maximum of safety.

Some features to keep in mind are adequate width, hand rails on each side and one in the center if the stairs are wide. Risers should be of nominal dimension and treads sufficiently wide. A non-slip surface, particularly at the nose, is desirable. Landings should be spaced at generous intervals. If located outdoors, the stairs should be designed for quick and easy cleaning during inclement weather. Radiant heat can be considered in the design of concrete steps to keep them clear of snow and ice.

Elevators—Elevators have received much attention in recent years as they are still the mainstay in vertical transportation. But they are fertile areas for accidents if not properly planned for the tasks they are called upon to perform. While most states have strict elevator codes, this does not prevent their misuse.

When planning movements by elevator, it is extremely important that it not only have sufficient capacity to carry the gross load but also be structurally designed to accommodate unbalanced or pin-point loads. For example, a 10,000 lb. elevator floor might collapse if the 10,000 lb. load is distributed over only four small wheels of a truck. The elevator should also be of suitable design and construction to operate smoothly and to level accurately at each loading and discharge point. Care must be exercised to avoid the possibility of load-shifting while the elevator is in operation.

Approaches must be free of obstructions at all times. Doors should be designed so as to require that they be closed while the elevator is in motion or improperly leveled at a landing.

Ramps—Ramps are very useful when slight differences in floor elevations must be negotiated by either pedestrians or vehicles. However, they should not exceed 10% in grade if used by industrial vehicles. They should have a good hard surface and be kept clean and in good maintenance condition at all times. Hand rails at the sides are a good safe guard. Radiant heating on outdoor ramps likewise is a good investment. Curbs should be provided if vehicular traffic is planned.

Floors—One of the most controversial subjects in industrial plant design is factory floors. Floors, particularly in multi- *(To page 48)*

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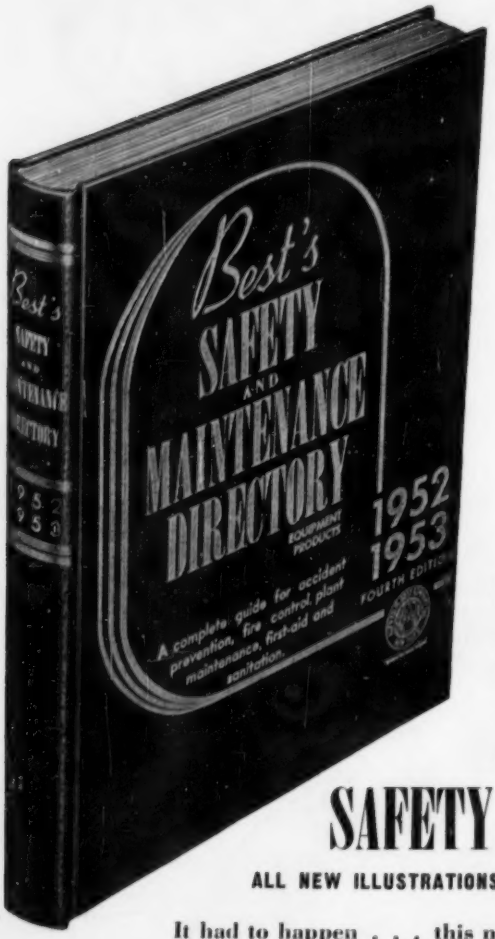

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The Right Cleaner for the Job

A concentrated neutral synthetic detergent should be diluted and applied to clean waxed composition floors. If properly used, the detergent will clean the floor yet still leave the protective film of wax.

Research tests for the Chemical Specialty Manufacturers' Association have shown that some detergents will cleanse the surface of waxed composition floors, while others remove the protective wax as well. Select cleaning agents that will do things FOR your floors instead of TO them.

By DR. RALF B. TRUSLER
Director of Research
Davies-Young Soap Co.
Dayton, Ohio

WAXED composition floors, like rubber and asphalt tile, linoleum, and cork can be maintained better if proper care is given to the selection of cleansing agents. In fact, such a selection will have as much bearing on the maintenance of the surface as the waxing.

The growth of the use of composition floors in heavy traffic areas in industries, institutions, and office buildings has brought with it the ever-recurring problem of how to maintain these surfaces so that their utility and appearance will be preserved. The best methods have been found to be the application of a wax coating combined with proper cleaning at regular intervals thereafter. Much has been written concerning the application of wax; but it is just as important that the cleansing agent be one which will remove dirt, yet maintain or enhance the appearance of the wax.

These floors are usually in "showplaces" where heavy traffic is to be expected and where impressions are made on visitors. It is therefore important that these floors be maintained in the best possible manner at all times.

Cleansing actually begins when the wax is first applied. Before the first coating, the surface should be washed clean with a good detergent and thoroughly flushed. Otherwise dirt will be trapped in the wax. If proper cleansing is first observed, other methods of preservation, like sealing, can be forgotten.

The wax itself should be evenly applied according to manufacturers' directions. It should be noted that no surface can stand repeated washing without damage unless the surface is protected as by waxing. The wax is essentially a lubricant to protect floors and take abrasion and wear.

The selected wax should have a good appearance and permit repolishing. It should be less slippery than an unwaxed floor and should not reduce the luster of the surface. It should not decrease appearance, particularly on new floors.

Cleansing can be a simple opera-

Cleansing of waxed composition floors can be a simple operation requiring only a wet mop and the proper cleansing agent. Dry mopping methods only remove dust.

tion requiring only a wet mop and the proper cleansing agent. A dry mop should not be used as this only removes lint and not dirt. Better sanitation will be achieved and the wax surface maintained if the proper detergent is used with the wet mop. This detergent should not remove wax appreciably and should have no injurious effect on the flooring. The washoff loss of wax, without the proper cleansing agent, is far greater than the wearoff loss.

The effects of good detergents compared with improper ones have been clearly demonstrated under controlled conditions when sections of waxed floors were washed with different kinds of detergents. All sections, in the beginning, had a high and pleasing luster. Then, separate sections of the floor were subjected to a series of cleaning tests equivalent to two months normal maintenance. In the instances where improperly compounded detergents were used, gloss meter tests showed that the wax was completely removed during the first washing and the floor was then unprotected. In cases where a concentrated neutral synthetic detergent was properly diluted and applied, the gloss meter tests showed that much of the original wax was left and that the flooring still had a protective film of wax.

Since wax is used in the first place to prevent disintegration of the surface, proper cleaning should be looked upon as an equally important method of preservation. With proper cleansing, there will be less cause for worry about floor conditions and, in the long run, less cost for replacement or repair. As this method of preservation depends on the detergent, simple methods of application may be used.

Proper cleansing should also be stressed because it often happens that a floor may be cleaned improperly, removing the wax. This condition is unknown to the owner or landlord of a building. The floor might appear to have wax but the protective coating has been removed and disintegration begun. By the time this is known, the floor may be beyond saving.

While all areas of a floor usually receive the same amount of wax and cleansing, additional efforts should be made on the areas around doorways. These areas bear the heaviest brunt of traffic and are the first to show the effects of wear and tear.

The number of times a floor should be cleaned depends on how heavy the traffic is. But, in all cases, the right detergent will save time, trouble, and money.

The foregoing statements are my conclusions made from a series of tests run by the Scientific Committee of Soap, Detergents and Sanitary Chemicals Division of the Chemical Specialty Manufacturers' Association. The problem assigned to this committee was that of washing waxed asphalt tile flooring to determine under what conditions the waxed surfaces can be cleaned without removing the wax and also under what conditions the wax can be removed without damaging the asphalt tile.

Test Procedures

Because asphalt tile had been commended to the subcommittee, it was accordingly chosen for the tests, which gave some interesting but not anticipated results. Thirty-two tile samples were waxed with eight brands of wax. After thorough drying, the tiles were washed, using a large swatch of cotton saturated with water solutions of 1% of the following detergents:

1. A non-ionic phenoxy polyalkonol
2. Neutral soy oil, potassium soap
3. Same soap plus 2% T.S.P.
4. Same soap plus 2% pine oil

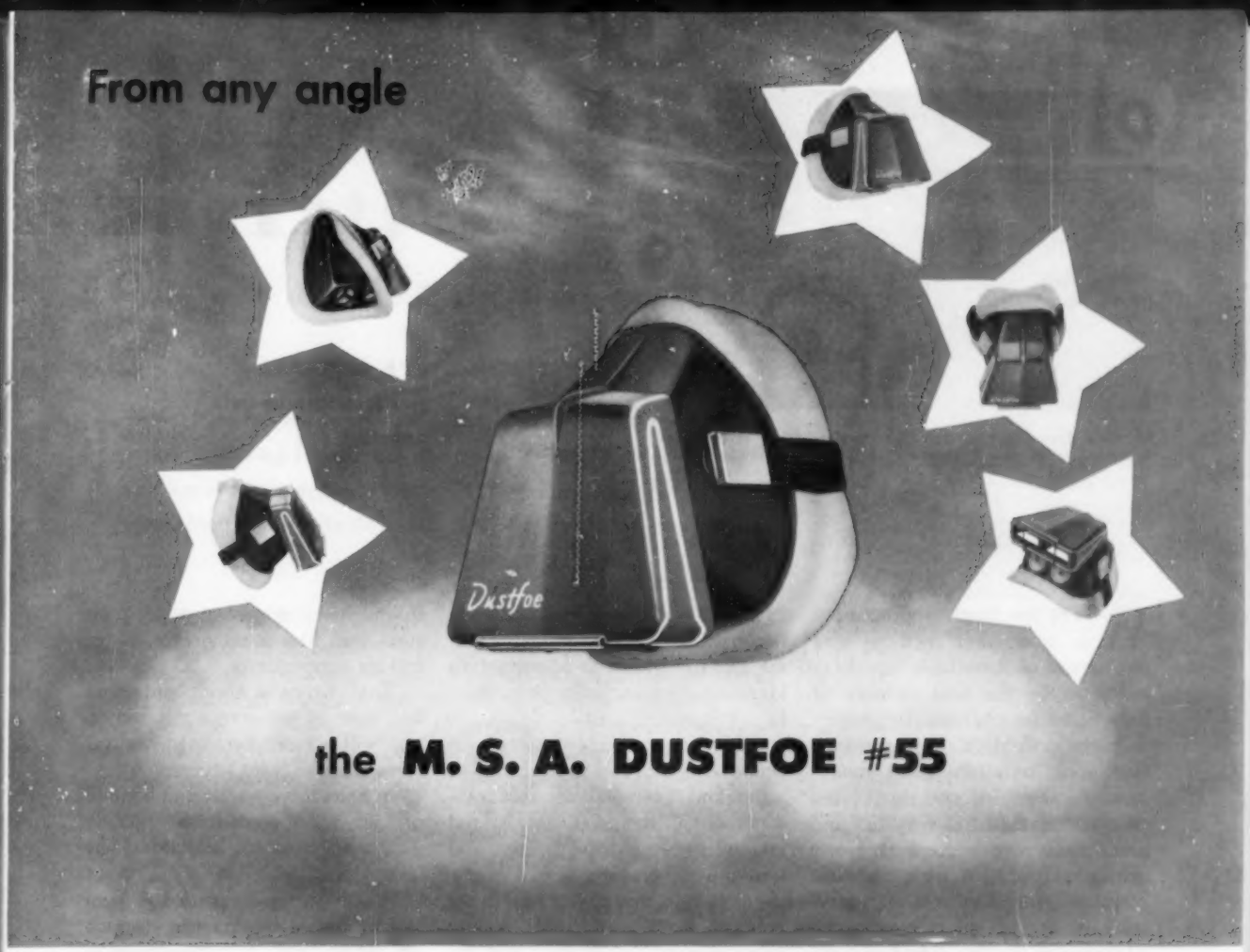
Each tile was washed with only one of these detergent solutions. The tiles were measured for gloss with the assumption that a reduction of the gloss, to a figure approaching the original luster of the tile before waxing, would indicate that the wax had been removed by washing.

The results, however, were not significant and showed that the post-washing gloss of these tiles could not be taken as an indication of wax remaining on them. The reasons for this are: (1) The tile manufacturing process, and in this case the original wax coating, had greater resistance to the action of the washing solution than the applied waxes. In fact, the mechanical action of washing appears to have a slight polishing action, causing the *(To page 58)*

TABLE I: Gloss Readings on Waxed Linoleum Tiles

Note: (a) Before polishing; (b) After polishing

WAX SAMPLE		A		B		C		D		E		F		G		H	
Gloss before washing		(a) 2.1	(b) 7.5	(a) 4.0	(b) 17.0	(a) 3.1	(b) 19.0	(a) 2.1	(b) 9.5	(a) 2.2	(b) 9.8	(a) 2.4	(b) 6.0	(a) 1.9	(b) 4.8	(a) 2.8	(b) 9.7
Washed	1st Wash	2.0		7.1		6.1		4.0		3.0		5.1		2.1		4.0	
with	2nd "	1.8	2.1	5.6	7.0	5.1	6.9	3.8	5.0	2.2	3.0	4.2	5.8	1.4	2.1	2.0	3.2
Sol. #1	3rd "	2.0	3.0	7.2	7.8	5.8	6.9	4.2	5.6	3.1	3.2	5.1	7.1	2.1	3.0	2.7	3.5
	1st Wash	2.0		5.8		4.8		4.0		3.2		5.1		1.8		2.5	
Sol. #2	2nd "	1.8	2.0	5.2	6.0	3.4	4.5	3.2	5.1	3.1	3.2	3.8	5.8	1.6	2.2	2.1	2.9
	3rd "	2.1	2.8	5.2	6.8	4.2	4.6	4.9	6.2	3.2	3.9	5.0	6.0	2.1	2.8	3.0	3.9
	1st Wash	1.7		2.0		2.2		2.0		2.2		1.9		1.8		2.0	
Sol. #3	2nd "	1.6	1.8	1.7	2.2	1.7	3.5	2.2	4.1	1.2	2.0	1.7	2.2	1.4	2.3	1.8	3.0
	3rd "	1.9	2.8	1.7	2.5	1.7	3.2	2.3	3.8	1.8	2.2	1.9	2.5	2.2	3.6	1.8	2.8
	1st Wash	1.7		6.3		4.0		3.1		1.9		4.1		1.9		1.8	
Sol. #4	2nd "	1.6	1.9	5.2	6.3	3.5	4.6	3.1	4.0	1.9	2.1	3.7	4.0	1.6	2.0	1.8	2.2
	3rd "	1.8	2.6	5.0	6.6	4.2	4.8	3.1	4.0	2.2	3.1	4.2	7.2	2.0	2.5	2.0	3.0



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Call the M.S.A. man on your every safety problem . . . his job is to help you.

Chemical foam, sprayed from four nozzles at left of tank, has formed an impervious blanket to smother fire in burning liquid.

Foam

By P. C. HENSLER
Fire Protection Institute
New York City

WITH the steady improvement in production methods and greater use of flammable liquids in industry, the size and violence of industrial fires continue to grow.

In the early days, despite utmost caution in industrial paint rooms, storage tanks, ovens, driers and many other industrial facilities and production methods, plant safety managers could do little else but keep their fingers crossed. If a stray spark or overheated motor ignited a highly combustible liquid in a dip tank, searing flames drove fire-fighters from the scene and the subsequent loss nearly always was substantial.

The first obstacle in the path of such industrial blazes was foam, in the form of portable extinguishers and then in built-in extinguishing systems. Fire protection systems which employ either chemical or mechanical (air) foam as the extinguishing agent are based on the principle of applying a smothering coating to a burning surface. The field of hazards which may be protected by foam systems is great.

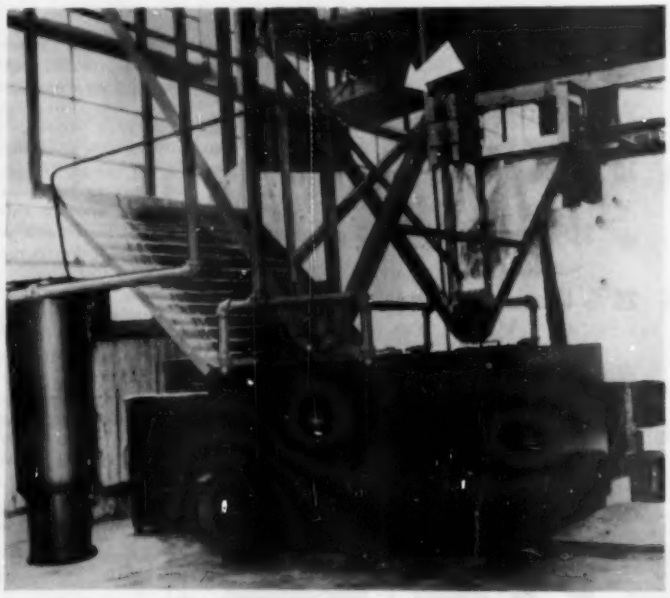
The protection of large oil storage tanks located outdoors is a notable example. Protection of large open dip tanks of flammable mixtures is another. Foam is also effective in extinguishing fires involving accidental spillage of gasoline.

Both chemical and mechanical foams float on liquids and adhere to most solid surfaces. Since the quality and consistency of foams play a large part in determining extinguishing effectiveness, it is important to know what affects these characteristics.

The determining factors for chemical foam are proportions of water and foam-making chemicals, water and air temperatures, size and length of foam delivery lines and sometimes, water pressure. For mechanical (air) foam, the factors are type of foam compound, proportions of water, foam fluid and air, thoroughness of mixing, water pressure—and to a lesser degree, water and air temperatures.

"Dry" foams or those containing less than 10 per cent water, generally will adhere better to vertical surfaces than "wet" types. "Wet" foam flows more readily and because of high water content, is generally more resistant to breakdown by heat.

Whether or not a particular foam system should be designed to operate automatically or manually can be



Automatic chemical foam system for protecting a dip tank. Arrow points to thermostat which activates system. Foam is discharged through piping.

Blankets Fire

Both chemical foam and air foam have proved their worth in extinguishing fires, especially those of burning liquids. Do you know all the types of automatic and manual foam equipment that are available today and how they can be used?

A manual type of chemical foam extinguisher for marine use. Valve is opened and tank inverted to discharge foam through hose.

determined only by a study of the hazards involved. In all cases, however, automatically operated systems should be provided with auxiliary manual controls.

Methods of Producing Chemical Foam

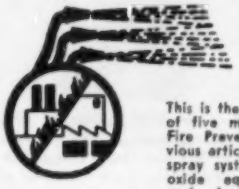
Solutions for chemical foam are stored in tanks. Chemical foam powder charges are stored in moistureproof containers. When a fire starts, the solutions are mixed, or water is admitted to the dry chemicals to form foam.

In its Handbook of Fire Protection, the National Fire Protection Association outlines the four principal methods of producing chemical foam as follows:

1. *Chemical units for local use are self-contained and automatic in operation. The foam producing materials are contained within the apparatus in solution form. The foam is discharged directly or through piping and distributing outlets. The foam discharge and the extinguishing capacity is limited to the quantity of foam producing materials contained within the device. These units are made in several standard sizes and are used mainly for the protection of relatively small hazards.*
2. *Closed-type generators are arranged for automatic and/or manual operation. The foam producing materials contained in the device are in dry form. The apparatus has provision for admitting a stream of water to these materials at the time of fire. Once again, the foam discharge and extinguishing capacity is limited to the quantity of foam producing materials. These devices are available in several standard sizes and are used mainly to protect hazards of relatively moderate size.*
3. *Hopper-type generators are used both as part of fixed systems and for portable use. For fixed locations, they consist of one or more hopper type generators, each with its discharge end connected by means of a piping system to discharge outlets. The inlet end of each generator is connected to a water supply. The stream of water and dry chemicals are admitted at the time of fire. The dry chemicals are poured into the hopper from pails, drums or bins and are drawn from the hopper into the water stream by suction which is produced continuously as long as the hopper is kept filled with the dry chemicals.*

   For portable use the hopper type generators are transported with chemical foam powder to the scene of the fire and foam is delivered through hose streams or fixed piping connections. One type hopper generator uses single powder and produces foam in the hose line or pipe at the outlet. It is used for tanks up to 60 ft. in diameter, with the generator within 400 ft. from the tank. The other type employs two powders each fed into separate hoppers, with the solutions discharged through separate outlets. The foam is produced at the point where the two hose lines or pipes meet. This is generally used for tanks over 60 ft. in diameter or where the generator must be located more than 400 ft. from the tank.
4. *Stored solutions systems were the first type developed for large scale protection, but have now largely been supplanted by generator systems. In stored solution systems, the two foam producing liquids are stored separately in tanks, the solutions transmitted separately at the time of fire by duplex*

FEATURE



This is the fifth of a series of five major articles on Fire Prevention. The previous articles, dealing with spray systems, carbon dioxide equipment, CBM, and dry chemical, appeared in the September through December issues.

Air type of foam compound is introduced into the water stream at the playpipe by means of a pick-up tube from the foam-compound container. Playpipes can be used also as nozzles on trucks and as fixed discharge outlets for stationary systems.

pumps to discharge outlets in which the solutions mix to produce and discharge foam on to the area being protected.

Methods of Producing Air Foam

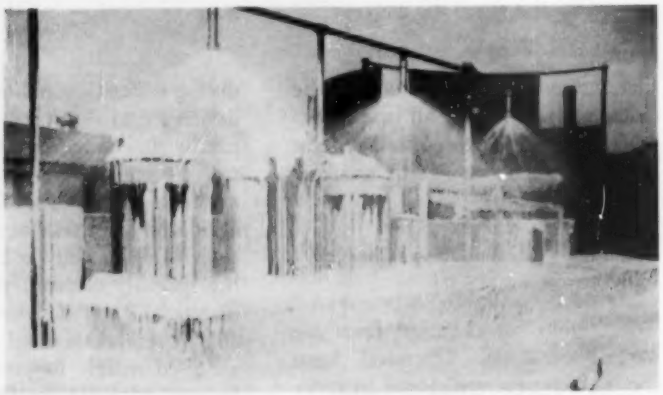
About twenty years ago, mechanical (air) foam was looked on with some suspicion because the bubbles were filled with air rather than inert carbon dioxide generated in chemical foam. Since, however, the mass of bubbles themselves form the extinguishing agent, it was discovered that its working efficiency was not dependent on the nature of the gas. Mechanical (air) foam is low in cost, readily portable and flexible. Although not a "war-baby," air foam is a war-proved extinguishing agent. It kills fire in oil, gasoline and other flammable liquids quickly and completely. It is also highly effective as a cooling agent on fires in other materials because of its high water content.

Unlike chemical foam which is produced by chemical reaction, air foam creates a fire-smothering mass of bubbles produced by physical or mechanical action. No matter what the size or special purpose of the air foam equipment, the basic principle is the same. To a flowing water stream, under pressure, a small percentage of foam-making compound is added. This solution sucks in air as it flows through special equipment and the churning of this air, water and foam produces air foam.

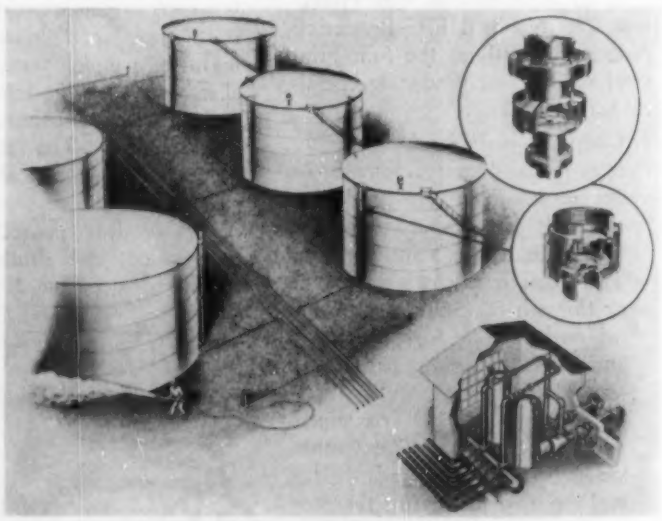
Air foam has no limits of temperature and solubility. The foam liquid may begin to congeal at 15 degrees F., but freezing and thawing do not impair the quality of foam produced. There are also available special foam compounds that will withstand temperatures of —20 degrees F.

The air foam is generated either in portable playpipes or in fixed or portable foam makers. Playpipes can be attached to any water line of adequate pressure and capacity. Playpipes and foam makers range in capacity from about 160 gallons of foam per minute to over 20 times that rate. They may be equipped with pick-up tubes which automatically draw foam compound in proper proportions from a reserve tank or directly from the original shipping container.

The compound may also be fed through a proportioning tank or continuous type inductor or other induction means installed at any convenient point *(To page 57)*



Overhead spray units deliver air foam to outdoor transformers. Foam proportioning tanks, pump proportioners, or pressure line inductors may make the foam.



Typical air foam system of proportioning tank type. Water enters foam house from water main or fire department siamese connection. It then passes through one of the two foam compound proportioning tanks. The water-foam mixture is directed to the foam maker on oil tank afire or to portable foam-making playpipe at one or more hose stations. May be operated continuously by using proportioning tanks alternately.

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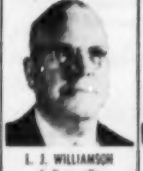
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WHAT APPROVED

What does the Bureau of Mines approval label signify?
What recent changes have been made in approval schedules?
What types of respiratory devices are suitable for various hazards?

By S. J. PEARCE, Chemist in Charge
Respirator Section, Health Branch
Bureau of Mines, U. S. Dept. of Interior
Pittsburgh, Pennsylvania

THE Bureau of Mines has prepared, as circumstances have dictated, a series of schedules setting forth the minimum requirements that various types of equipment should meet to be considered safe and satisfactory for use in certain hazardous or unhealthful conditions.

Among them are schedules for the testing and approval of the following types of respiratory protective devices: Self-contained breathing apparatus, supplied-air respirators, gas masks, dispersoid respirators, and chemical cartridge respirators. These devices are tested at the Central Experiment Station of the Bureau of Mines in Pittsburgh, Pa. Self-contained breathing apparatus is tested by the Safety Branch, and other types of respirators are tested by the Health Branch.

Bureau of Mines approvals of respiratory protective devices are based upon performance tests rather than upon specifications as to how the devices must be built. For instance, the maximum exhalation resistance of a gas-mask facepiece to an air flow of 3 c.f.m. is set at 1.25 inches of water, but there is no requirement as to the size and shape of the exhalation valve or as to the composition and physical properties of the material from which it is made. This policy allows the manufacturers wide latitude of choice in the design of respirators and allows the Bureau to approve radical changes and improvements in the devices without frequent revision of the schedules. Each schedule contains a statement to the effect that: (1) the respirator must be constructed, in all of its parts, of materials suitable for the purpose they must serve, and (2) the design, mechanical construction, durability, and workmanship must be satisfactory from the standpoint of safety of the wearer, freedom of movement, field and clearness of vision, fit of the facepiece, and comfort under all conditions of use. This statement gives the Bureau of Mines certain discretionary powers that permit the denial of approval of a device that may meet the performance requirements of the specific schedule yet may be extremely uncomfortable to wear, flimsily built, or constructed of materials that are not suitable for conditions the device will encounter in service.

Table 1: Respiratory Protective Devices Suitable for Various Hazards

A. OXYGEN DEFICIENCY
- *Self-Contained Breathing Apparatus*
- *Hose Mask With Blower*

B. TOXIC CONTAMINANT

I. GASEOUS

a. **Immediately Dangerous to Life**
- *Self-Contained Breathing Apparatus*
- *Hose Mask With Blower*
- *Gas Mask*

b. **NOT Immediately Dangerous to Life**
- *Air-Line Respirator*
- *Hose Mask Without Blower*
- *Chemical Cartridge Respirator*

II. GASEOUS & PARTICULATE

a. **Immediately Dangerous to Life**
- *Self-Contained Breathing Apparatus*
- *Hose Mask With Blower*
- *Gas Mask With Special Filter*

b. **NOT Immediately Dangerous to Life**
- *Air-Line Respirator*
- *Hose Mask Without Blower*

III. PARTICULATE
- *Dust, Mist, or Fume Respirator*
- *Air-Line Respirator*
- *Abrasive Blasting Respirator*

Performance Requirements

The performance requirements for any given device are based upon its field of use and upon the three basic requirements for a satisfactory device: (1) It must provide adequate protection for a suitable period; (2) it must be reasonably comfortable and convenient to wear; and (3) it must be constructed of durable materials. The desirable characteristics of the device are considered from the idealistic and practical standpoint, tentative requirements are set up, test apparatus and procedures are devised, and tests are made on the devices available at that time. On the basis of these tests, such modifications of the requirements as seem desirable are made. An effort is made to anticipate possible future developments and modifications of the device and its field of use, and to make the schedule flexible enough to be applicable over as wide a range of design as possible. A tentative draft

IS AN RESPIRATOR?

of the proposed schedule is sent for comment and criticism to industrial hygienists and safety engineers known to be well qualified to comment on it, as well as to the manufacturers and users of the device. Such comments and criticisms as are received are weighed, and indicated changes are made in the proposed schedule.

If the extent of the changes in the second draft of the schedule warrant it, further comment and criticism are invited. The final form of the schedule then is submitted to the Secretary of the Interior for approval and, if approved, becomes effective on the date on which it is published in the Federal Register. Once a schedule has been published, all those concerned must abide by its provisions until it has been officially revised, if the desirability of such action is indicated. The Bureau of Mines may test and approve only those devices that are covered by existing Bureau of Mines Schedules. When devices not covered by existing schedules are developed and have come into use, and if they are deemed worthy of Bureau of Mines approval, existing schedules are revised, or new schedules are prepared to cover them. For instance, air-line respirators and abrasive blasting respirators were covered by revision and broadening of the scope of Schedule 19, which previously applied only to hose masks; non-emergency gas respirators or chemical cartridge respirators required the preparation of an entirely new schedule. Work is in progress at present on the development of performance requirements for paint-spray respirators.

Submitting Devices

The submission of respiratory protective devices to the Bureau of Mines for approval is entirely voluntary on the part of the manufacturer. The Bureau acts merely as an impartial testing agency that makes available to the public a list of respiratory protective devices that have met definite performance requirements. The wide acceptance of Bureau of Mines approval of these devices encourages the manufacturers to submit them for approval.

A manufacturer may visit or communicate with the Bureau of Mines at Pittsburgh to obtain criticisms of proposed designs of respirators or to discuss the test requirements in connection with a device to be submitted. No charge is made for this consultation, and no written report is made to the manufacturer.

There are certain requirements that must be fulfilled before the Bureau of Mines will undertake the active investigation of a respirator. The manufacturer must file an application that contains: (1) a description and complete drawing of the device, (2) a statement that the device is completely developed and is of the design and materials believed suitable for a finished marketable product, (3) a statement that the device has been tested according to the schedule's requirements and has met them, (4) a statement regarding the nature, adequacy, and continuity of the control of the quality of the device, and (5) a request that the necessary inspections and tests leading to approval be made.

If the application is in order, the manufacturer is notified of the number of complete respirators and replaceable parts that the Bureau of Mines will need for tests, and of the testing fee required. On their receipt, the Bureau proceeds with the testing of the device. The tests may be witnessed by the manufacturer's representative, with the understanding that the results are to be kept confidential. The test data obtained are compared with those obtained by the manufacturer. If serious discrepancies are noted, both parties rerun the tests and recheck their data and the cause for the discrepancy is determined and remedied. This comparison of test data is important since it serves as a check by the Bureau on the manufacturer's quality control procedure. If the device meets the schedule requirements, the manufacturer is notified formally that the device is now approved and is furnished with copies of the official approval plates.

If, however, the device fails to meet the requirements, the Bureau

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FEATURE

This is the first of three feature articles concerned with Respiratory Protection. The next two articles of the series will be published in the February and March issues of SAFETY MAINTENANCE & PRODUCTION.

attempts to determine the cause of the failure and makes suggestions to the manufacturer as to how the difficulty might be overcome. This is in keeping with the philosophy that the Bureau of Mines approval system for respiratory protective devices exists, in large part, for the purpose of promoting the development and manufacture of such devices of known good quality, and not for the purpose of stifling and inhibiting such development. After the manufacturer has made appropriate changes in the device and has satisfied himself by tests that it now is ready for further approval testing, he resubmits it to the Bureau with a fee in proportion to the number of additional tests required.

The Bureau of Mines approval applies only to the respirator as a unit and not to its integral parts. For instance, suppose that approvals had been granted to four respirator manufacturers, A, B, C, and D, on four entirely different universal-type gas masks. An assembly of A's canister harness, B's canister, C's timer, and D's facepiece would not constitute an approved assembly, even though these individual items are parts of approved gas masks. This approval of complete devices applies throughout the entire Bureau of Mines approval system.

Approval Labels

The respirator approval labels prepared by the Bureau and issued to the manufacturer must appear on the containers for the approved devices. In addition, special approval labels must appear on the individual canisters or cartridges, and special approval labels must appear on the containers for extra filters for dust respirators. Approval markings are required, also, on certain individual parts of the approved devices, such as the canister harness, canister, timer, and facepiece of universal-type gas masks and the facepiece and filter of a dust respirator.

The approval label on a respirator contains much more information than the bare fact that the device has been approved by the Bureau of Mines. (1) It gives the limitations of the approval, such as the type and maximum concentration of gas in which a gas mask may be worn, or a statement such as appears on the approval label of a Type C supplied-air respirator: "Approved for respiratory protection in any atmosphere not immediately harmful or from which the wearer can escape unharmed without the aid of the required, also on certain individual respirator"; (2) it lists the approval markings on the parts that make up the approved assembly; and (3) it has statements regarding special precautions that should be taken in the use of the device. The approval labels should be studied carefully, so that the devices may be used in an approved manner. It is pointed out that even though a respirator has Bureau of Mines approval markings all over it, if it is used improperly or under conditions other than those covered by the approval label, the approval is invalidated.

In most of the Bureau of Mines Schedules for approval testing of respiratory protective devices is a statement similar to the following statement from Schedule 21: "When any situation arises in which the inadequacy of protection or unusual hazard attending the use of an approved device is established, the manufacturer or manufacturers of any devices involved are requested to affix caution statements, or, if necessary, to cease marketing the device for the particular situation or condition until such changes or provisions as will provide adequate protection are made, it being understood that any provisions or changes made must be submitted to the Bureau of Mines and have this Bureau's approval before they are adopted. Should the situation require a change in the basic requirements and/or tests provided in this Schedule, such changes will be issued as a supplement to the current Schedule and later incorporated in a revision."

Recent Changes

An illustration of the operation of this principle is as follows: It has been customary in the past to refer to respirators that have been tested by the Bureau of Mines against lead dusts as "toxic dust" respirators, those tested against both silica dust and lead dust as "all-dust" respirators, and those tested against lead fumes as "fume" respirators, with no limitation as to the dusts and fumes covered by the approval. In the past few years, several highly toxic dusts and fumes have entered the industrial picture, namely, beryllium dusts and fumes, dust impregnated with organic phosphorus compounds, such as some recently developed insecticides, and radioactive dusts. In the interest of safety, the Bureau of Mines has decided to limit the approval of toxic dust, dust, and fume respirators to dusts and fumes that are not significantly more toxic than lead. Hence, the approval plates of all such respirators have been revised to include the statement, "that are not significantly more toxic than lead."

Another illustration is the Bureau's decision not to approve mechanical-filter type respirators for respiratory protection against lead-paint mist, even though provision is made for such approval in Schedule 21. On the basis of the answers received in response to a questionnaire, the Bureau has decided that approval will be granted for respiratory protection against paint sprays only to devices that are capable of removing organic vapors as well as solid particulates and mists. This will necessitate the preparation of a set of new performance requirements for such respirators, and test apparatus is being assembled for this purpose.

The Bureau of Mines approval label on a respirator is an indication that it has met certain performance requirements. Approval Schedules are available to the user if he wishes to check on what these requirements are. The Bureau does not, and cannot, make any statement as to how much a device exceeds these requirements, nor does it recommend the use of any specific one of several approved respirators of the same type. Any claims to *(To page 47)*

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A Score for

Above picture shows a typical interior installation of steel sectional scaffolding for safe and economical maintenance work.

Bulky, inefficient wood shoring of the type being replaced with steel sectional scaffolding.

If you compare metal sectional scaffolding with makeshift wooden equipment, the modern metal types get a higher rating for speed of use, safety, economy and re-usability.

WHEN the very first structure was built, the need for a device on which workmen could stand at higher than ground levels became known.

For hundreds of years, a succession of complicated, unsafe, and costly methods have been used to accomplish this end. Workmen have used many materials including crude hand woven vine ropes, bamboo poles, freshly cut logs bound together with ropes, lumber, timbers, and the modern metal sectional scaffolding equipment in providing platforms on which to work.

While there is very little to be learned about early scaffolding methods, it is known that the early Egyptians were able to make saws from bronze for the purpose of cutting wood. It is known further that crudely constructed timber funeral biers were constructed at that early date. This was the first use of man-made platforms above the ground level. It was later discovered that the sawing of logs lengthwise to produce timbers was detrimental for scaffolds in that this method cut the longitudinal fibers. At this point, the common practice of splitting logs to preserve fiber strength was started. Such logs were bound together to form the early and long used single-pole type of scaffold.

The commercial use of metal frame scaffolding started in the thirties. This industry has grown by leaps and bounds in the replacement of the more primitive, uneconomical, and unsafe lumber scaffolding.

Scaffolding in general can be broken down into four main classifications:

I. Wood
II. Frame (a. Steel—b. Aluminum)
III. Tube & Clamp (a. Steel—b. Aluminum)
IV. Swing (a. Steel—b. Aluminum)

FEATURE

This is the second of a series of three feature articles on Off-the-Ground Safety. The next article of the series will appear in the February issue of SAFETY MAINTENANCE & PRODUCTON.

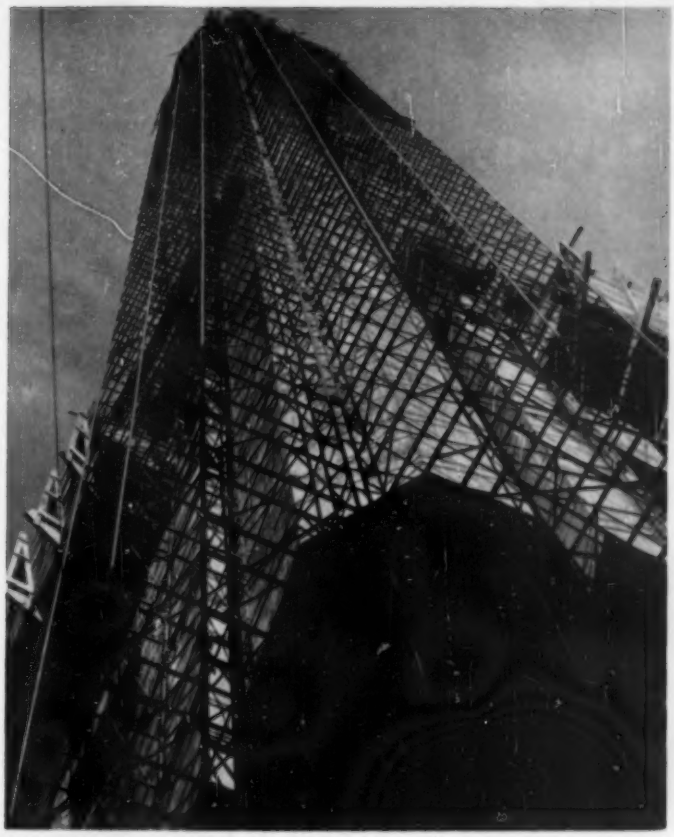
Wood Scaffolding

There are three general types of wood scaffolding: wood rings, wood bucks, and wood single pole.

A. Wood Rings: Wood rings were developed early in the century as a portable low-elevation support for home builder workmen. They are still in use in some communities, but are costly, inefficient, unsafe and

Card Scaffolds

By DANIEL P. CLOSSER
Safway Steel Products, Inc.
Milwaukee, Wisconsin



Modern scaffolding for modern use—steel sectional scaffold on television towers.

require constant replacement.

Construction: The wood ring is roughly five feet square and is normally built with 2 x 4 lumber. It takes approximately 35 lineal feet of such lumber to construct a ring with diagonal corner bracing.

Methods of Use: A number of wood rings are generally placed side by side on edge, approximately 6 ft. apart, and are tied together by cross bracing comprised of 1 x 6 or 2 x 4 lumber which is nailed to the 1⅜" edge of the rings.

Design and Efficiency Weaknesses: Wood rings are not considered safe at elevations beyond ten feet. It is plain to see that each elevation of rings must be completely planked in order to support the second elevation which must also be planked to provide a workman's platform.

Lumber and labor costs, even in a normal economy, render this type of scaffolding uneconomical.

The constant use of nails driven into the 1⅜" side of the rings, cause the wood to become spongy and no longer able to support the bracing. This condition, of course, is dangerous to workmen and causes constant and frequent replacing of the rings.

Dismantling causes the destruction by splitting of approximately 25% of the cross brace lumber, and is even more costly from the standpoint of labor costs involved.

Wood rings, because of the different types of lumber used and types of construction, have varying weight-carrying capacities some of which are dangerously low.

Being made of wood, rings increase the fire hazard and because of expansion and contraction due to weather conditions are susceptible to a splitting and loosening action which render them unsafe. Further, there are no provisions for guard rails.

How NOT to scaffold: Unsafe mixture of wood pole, timber and wood buck scaffold.

B. Wood Bucks: Wood bucks were developed primarily as a method of supporting lumber which required sawing. They are also known as saw (To page 43)

How to organize an effective safety program and integrate it with the basic production objectives.

By SAM E. SHARP, Safety Director
Tennessee Copper Company
Copperhill, Tennessee

DOWN in the extreme southeastern corner of Tennessee, in what is known to the mining world as the Ducktown Basin, are located the mines and plants of the Tennessee Copper Company. Here the company mines and mills a complex sulfide ore containing economic values of copper, iron, sulfur and zinc.

Copper and iron concentrates are reduced for producing blister copper, iron sinter, sulfur dioxide gas and slag for the market or manufacturing purposes. Copper, iron sinter, zinc concentrates, sulfuric acids, liquid sulfur dioxide, copper sulfate, and several fungicides are marketed. Company operations are carried out by some twelve operating and general service departments.

Departmental management is responsible to general management for production of maximum quality and quantity at a minimum cost unit, much the same as though the department were an independent business. Accident prevention is looked upon as the elimination of interferences with production, and management has tried to design and organize a balanced program which will satisfy the fundamental requirements for efficient operation.

This, in brief, is the background for a safety program which has won recognition from the National Safety Council, the U. S. Bureau of Mines, and the State Department of Health.

While certain basic characteristics of the general safety program are followed throughout the organization, it is management's desire that departmental details be handled in a manner suited to its problems, facilities, and personnel. Basic objective are as follows:

1. To challenge departmental management's ingenuity in making basic improvements in facilities, processes or methods.
2. Encourage improvements in the supervisory approach and technique.
3. Develop a cooperative attitude in each employee.
4. Maintain interest in quality workmanship at all levels of

FEATURE

This is the third of a series of three feature articles on Educational Aids. The first two articles, dealing with Signs and Visual Aids, appeared respectively in the November & December issues.

employment.

The means of obtaining these objectives are not new. But they enjoy management's sincere support and details of operation are changed to meet changing conditions. They are: 1. Safety committees; 2. Group meeting and awards; 3. Employee training; 4. A safety engineering department.

Safety Committees

The four general types of safety committees designed to reach all levels of personnel are: 1. Central, or Works, Safety Committee; 2. Labor-Management Safety Committee; 3. Departmental Safety Committee; 4. Workmen's Safety Committees.

Central Safety Committee. This committee includes all department heads. The production manager is chairman and the safety director is secretary. The committee meets monthly for discussion of the broader aspects of safety in its relation to company policy and operating technique. It is the chairman's attitude that the departments have the personnel and know-how to handle a safety problem after it has once been identified and the purpose of discussing it is to arouse an interest in it and encourage action. It is felt that what some departments are doing along specific lines may be of inspiration or help to other departments.

Labor-Management Safety Committee. The labor-management committee includes the chief steward from each operating department and the safety staff. The safety director acts as chairman and a safety engineer as secretary. The committee meets monthly for discussing certain aspects of safety cooperation. This includes such items as accident-cause summaries, new developments in the safety or hygiene program or equipment, cooperative enterprises, etc. Suggestions concerning specific conditions considered unsafe are discussed only after they have been taken up with the immediate foreman without ac-

(Continued on page 40)

Type B—illustrated above, with carrying case.

Type A—for fixed installation.

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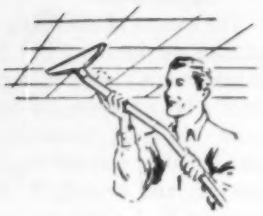
How to Clean Acoustical Materials

Suggested maintenance methods for sound-absorbing tiles.



A vacuum or wallpaper cleaner will clean acoustical tile without damaging the surface.

Most acoustical tiles can be cleaned merely by washing or scrubbing with a mild soap solution. With materials that would have a tendency to absorb moisture or have a rough textured surface, some other methods of cleaning should be used.

Although acoustical tile is factory painted, remodeling or the desire to have it conform to certain color schemes sometimes makes it necessary to repaint. It may be painted many times without reducing absorption.

Acoustical tiles can be removed for the repair of wiring, plumbing, etc. Installations using a suspended system (shown here) are the easiest of all for such servicing.

IN A report from the Acoustical Materials Associations Technical Committee a list of recommended methods of painting and cleaning of acoustical materials has been presented as an aid to builders, architects and maintenance personnel. According to the report, maintenance is a more important consideration in some installations than in others because of the composition of acoustical materials and the various ways their surfaces are finished.

These suggested general methods for maintenance of the different materials were recommended:

Perforated Materials

Perforated materials may or may not have washable surfaces. Those that are washable can be cleaned with a sponge dampened with mild soapy water and rinsed with a dampened sponge. Loose dirt can also be removed by brushing or vacuum cleaning. The vacuum cleaner nozzle of the attachment should be drawn lightly across the surface of the acoustical tile in one direction. This prevents rubbing dust into the surface. Non-washable materials can be cleaned with a good wall paper cleaner. Fresh cleaner should be used, since old cleaner often gets "sticky" and does not do as good a job. Any mark or smudges that are not removed by washing can usually be cleaned off quickly with an ordinary artgum eraser.

Fissured Materials

Fissured materials should be washed with a minimum amount of water, since moisture can have injurious effects on the materials. Care should be taken not to injure the fissured surface during cleaning.

Perforated Metal

Perforated metal pan materials are easy to wash because of the smooth enamel finish on the tile. It is necessary, however, to be careful not to force water through the tiny holes in the metal surface, as water forced through the holes will run back, forming unsightly small circles around the perforations. It is recommended that soapsuds be applied with a good paint brush (4" bristles) rather than a sponge.

There are two methods of repainting acoustical materials: spray painting and brush painting. When painting acoustical materials one should be careful not to close up the perforations or fissures. If care is taken, the acoustical material may be repainted numerous times without impairing the acoustical properties of the material.

A good grade of flat oil paint, suitable for interior finishes, is recommended for general use in repainting all acoustical materials. Sometimes enamel paints can be used. Water paints should not be used since they have a tendency to warp acoustical materials.

Spray Painting

Spray painting is the more desirable method of applying the paint because it provides a smooth even coat, and there is not as much chance of clogging the surface openings. The paint should be thinned as much as necessary for proper spraying, and a solvent recommended by the paint manufacturers should be used.

After all loose dust has been re-

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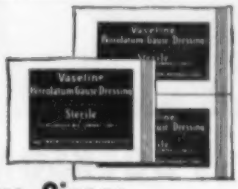

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moved from the material with a brush or vacuum cleaner, apply the paint with a light spray, directing it against the surface from all four directions in turn. Use a rotary motion to get a uniform coating on the inner sides of the perforations or fissures. This method is recommended for most perforated wood fiber, fissured mineral wool and fissured cork tile. In the case of a perforated metal tile, the paint stream should be directed squarely against the surface of the material, moving the gun back and forth to get a uniform coating.

Brush Painting

In brush painting careful workmanship is very important. The brush used should be approximately 4" wide, with 4¾" fine bristles. After the acoustical material has been cleaned in the same way as for spray painting, it may be necessary to thin the paint to a consistency such that it will not close the perforation or fissures. In general paint should be thinner for use on fissured materials than for perforated materials.

The brush should be wet thoroughly with paint. The excess paint should be wiped from the outside of the brush. If bevelled materials are used, paint should be first applied to all four bevels of the unit. Touch the surface of the material at several points to distribute the paint evenly and brush out this paint to a uniform coating.

Pictures: Upper right from Flintkote Co.; Left side from National Gypsum Co.

Warehousing Accidents

ONE in every 16 of the inside employees of the warehousing and storage industry experienced a disabling work injury during 1950, the U. S. Labor Department's Bureau of Labor Statistics has announced. Time lost from work because of these injuries was equivalent to 4.5 days for every employee in the industry. For comparison, the corresponding all-manufacturing averages were: 1 disabling injury for each 34 workers and about 2.4 days of lost time per worker.

The over-all injury-frequency rate for all inside workers in all types of warehouses was 31 disabling injuries per million employee-hours worked. However, the rate varied from 39.7 in refrigerated warehouses to 21.0 in household-goods warehouses.

Injury-frequency rates for individual occupations ranged from 85.9 for coolermen to 2.0 for clerical personnel. General warehousemen, the largest occupational group, had an industry-wide frequency rate of 38.2. In particular types of warehouses their rate ranged from 23 in farm-product warehouses to 50 in merchandise warehouses.

In general, the occupations with the highest injury-frequency rates had the best records in respect to injury severity.

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Ebasco Annual Safety Awards

MISSISSIPPI Power & Light Company was presented the Ebasco Gold Award for having an "injury index" 65.72% below the national average for the electric utility industry during the past year. R. B. Wilson, Vice President, Mississippi Power & Light, received the award at a special ceremony attended by chief executives of Ebasco client companies at the Hotel Roosevelt in New York, last month.

Columbus and Southern Ohio Electric Company received the Ebasco Silver Award for the second best record, an injury index 64.89% below the industry average. Dallas Power & Light Company and Mid-South Gas Company received certificates of achievement.

According to a unique plan worked out by Ebasco, all companies that achieve an injury index 25% below the national average for their respective industries are honored. The injury index is a composite of the frequency and severity of accidents.

Mississippi Power & Light Company's achievement of an injury index 65.72% below the electric utility national average is particularly excellent when it is considered that the company's index was 200% above the national average only four years ago.

Dallas Power & Light Company, in winning one of the certificates of achievement, also demonstrated remarkable progress, having brought its frequency rate down from 42 in 1948 to a current figure of 5.88.

In presenting the awards H. H. Scaff, Ebasco Vice President, stressed the importance of safety from the standpoints of good employee relations, good public relations and good economics. Mr. Scaff called attention to the fact that last year industrial accidents killed 15,500 workers and maimed or wounded 1,935,000 others.

The Ebasco Safety Awards, which are presented annually, are in the form of plaques and certificates of achievement. On the plaques a male

figure symbolizing accident prevention holds the shield of "Precaution" over electric generators, oil derricks, power lines, trolleys, gas storage tanks, buses and other symbols of the industries in which client companies are engaged. In the background a female figure holding a spray of palm symbolizes the award motif. The plaque was designed by the noted sculptor, Rene Chambellan.

The Awards Committee consists of P. J. Bott, Safety Director, Arkansas Power & Light Company; V. V. McDonnell, Safety Director, The Montana Power Company; F. D. Norberg, Safety Director, Utah Power & Light Company; V. L. Womeldorff, Safety Director, Illinois Power Company and W. T. Rogers, Safety Consultant, Ebasco Services Incorporated.

Ebasco Services Incorporated, the service organization of Electric Bond and Share Company, serves clients engaged in electric, gas, transportation and other utility operations in addition to industrial and general business concerns in the United States and also foreign countries.

Four-Point Safety Program

(Continued from page 37)

tion or an answer.

Departmental Safety Committees. A departmental safety committee includes all of the department's general supervision. The department head acts as chairman and a safety engineer as secretary. The

committee meets weekly for discussing current production schedules, problems and production hindrances or accidents occurring during the week, for assigning causes and taking action.

Workmen's Safety Committees. This type of committee has been discontinued in all except the Mining Department. It is an inspecting committee and includes the assistant general mine foreman and a safety engineer, with a foreman and two workmen in each mine. The assistant general mine foreman inspects each mine monthly with the respective committeemen of the mine. Corrective action is usually taken immediately upon recognizing a condition or practice which is considered to be unsafe; however, an occasional unusual condition is located which must be referred to an appropriate authority with the necessary knowledge or facts for making an equitable decision.

Group Meetings & Awards

There are four general types of meetings designed to reach all employees: 1. Departmental supervisory meetings, 2. Departmental and sub-departmental general meetings, 3. Crew meetings, 4. Planning conferences.

Departmental Supervisory Meetings. Most departments hold monthly meetings in which all supervisory personnel participate. In these meetings, the department head discusses departmental and company business which includes general company business, production schedules, personnel problems, mine or plant development and problems or accidents. Frequently audio-visual aids are used in these meetings.

Departmental And Sub-Departmental General Meetings. These meetings are not held on a routine schedule except in the Mining Department where one is held each Spring and one each Fall. In most departments, this type meeting is held for a specific purpose: To celebrate a no-accident record, or to discuss a bad accident record and to suggest improvements. At these meetings, talks are given by management and departmental representatives. Outside speakers are brought in on occasions. Frequently, employees are given some item to take home, such as a pound of coffee, a bag of sugar, a basket of groceries, or a ham. Recently, one department gave its employees a picnic. Sub-departmental meetings are similar in nature and purpose to the departmental general meetings. They differ mainly in the type of program. They are usually held for giving the group special recognition for a specific achievement. They vary in character from a dinner meeting to an informal meeting for distributing awards.

For some two years, sub-departmental divisions and the entire plant have been given a pound of coffee for each employee for operating a

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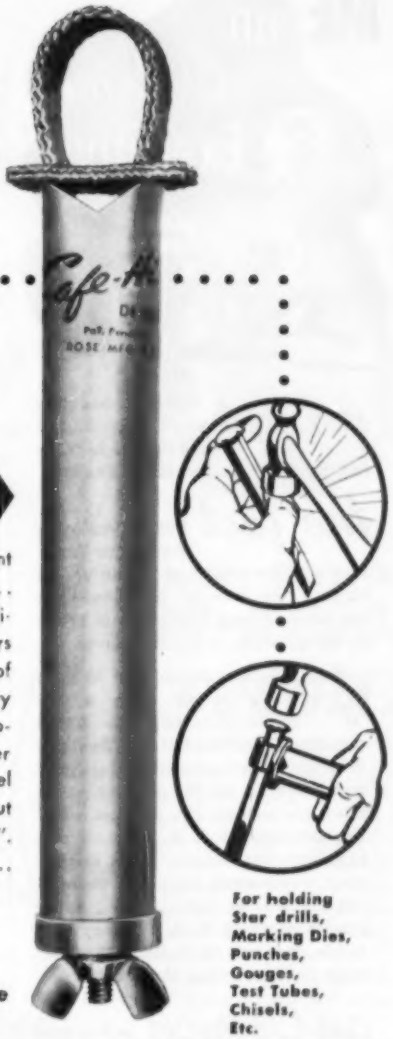

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many a topflight executive would be shocked to know that he is playing ostrich with his firm's destiny.

the fact that he employs a watchman gives him a false sense of security. He ignores the human equation—that an unsupervised watchman is prone to sleep, shirk and skip rounds.

if this is the condition in your plant, do not delay a day in investigating the DETEX GUARDSMAN Watchclock System. With the GUARDSMAN on the job, your watchman is on the job—or you'll know the reason why in short order. The GUARDSMAN is a foolproof mechanical conscience that records your watchman's activities throughout his tour of duty . . . . . every minute of every hour. It accepts no alibis. It is just as vigilant on weekends as it is during the week.

an Ostrich policy may result in a burned-out plant, a ruined business over night. Guard against trouble with the GUARDSMAN. Send for free descriptive folder today.

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specified period of time without a disabling injury. The entire plant period is 30 calendar days and the periods for sub-departmental divisions vary from 60 to 270 calendar days, depending upon its size and the nature of its exposure. This award scheme was designed primarily to encourage a wholesome competitive spirit and as an instrument for higher supervision to make personal contacts with employees that would not otherwise be made.

Crew Meetings. These meetings are held at regular intervals—weekly, bi-weekly, or monthly on company time, depending upon the nature of the exposure or attitude of the department head. They are just what the name implies. The foreman can bring his crew together for a business discussion of specific hazards, safe practices, and cooperative enterprises. The meetings last from 15 to 30 minutes, depending upon how much business the foreman has to take up with the crew. Audio-visual aids are used on occasion. In several departments where weekly meetings are held, one meeting each month is devoted to audio-visual aids.

In addition to the crew meetings, the Mining Department has blackboards in each mine change house, one for the day crew, one for the evening crew and the third for the night crew. Any workman noting a condition which he considers to be unsafe on his shift can write it on the board any time during the week, in addition to reporting it to his foreman. The *(To page 73)*

Safety Engineer Available

Experienced in inspection of mechanical facilities, accident analysis, accident investigations, educational safety programs, production methods and management policies. Member of American Society of Safety Engineers. Location immaterial. Send replies to Box 291, c/o Safety Maintenance & Production, 75 Fulton St., New York 38, N. Y.

Plant Maintenance Show

Greatest Display of Maintenance Aids Ever Assembled to be Exhibited at Plant Maintenance Show; Six Thousand Machines and Products, Many Shown for First Time, Will Be on View

MORE than 6,000 machines and products useful in various aspects of industrial maintenance, the greatest such display ever assembled, will be on exhibit at the Plant Maintenance Show, which will be held at Convention Hall, Philadelphia, Jan. 14–17, 1952, it was announced by Clapp & Poliak, Inc., New York, the exposition management.

Most of the machines and products will be shown in demonstrations of actual use to provide executives with opportunities for comparisons, it was stated. A large number of the exhibits will be aids to maintenance which are being introduced to industry for the first time.

Fourteen thousands executives from all parts of the country are expected to attend. Advance registrations indicate that more than 30 foreign countries will be represented among the visitors.

Concurrently with the show, a Conference on Plant Maintenance will be conducted with 57 industrial leaders drawn from many of the nation's outstanding companies as participants. Manly Fleischmann, administrator, Defense Production Administration, will discuss "Plant Maintenance in National Defense" at the annual banquet.

Conferences will be divided into two types of sessions: those general in nature, and those for particular industries. Among the industries to get special attention are buildings, electrical, chemical, metal producing, metal working, materials handling, welding, sanitation, power plants, aircraft, food, glass, oil and petroleum, printing, pulp and paper, and textiles.

Advance registration cards may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

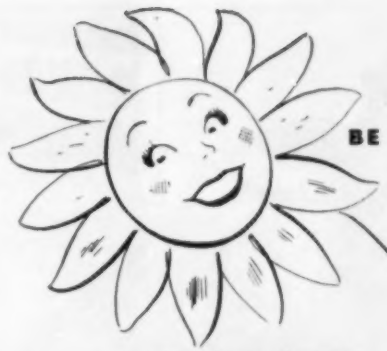
Defense Plant Safety Record

THE Chicago firm, Scully-Jones & Company, manufacturers of standard and special production tools, has been honored for an outstanding safety record—three years without a disabling accident or an accident that caused the loss of a single day's work.

H. D. Long, company president, and Joseph Kosinski, works manager and chairman of the plant safety committee, received an honorary plaque in recognition of the record from R. E. Dalstrom, midwest safety director for the company's insurance carrier.

"You should be proud of the fact that your 400 employees worked a total of 1,334,325 man-hours without a single lost-time accident," Dalstrom said at the presentation ceremony after a dinner meeting of the Scully-Jones Management Club attended by executives and supervisors.

"The record is especially commendable in these days of critical manpower shortages," Dalstrom commented. "It should be an example of what can be accomplished through efforts and cooperation of management and labor."



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Sample sent $2.00 pp

wear Cover's FOG-PROOF GOGGLES

Famous "Nod & Shake" Type

Used by thousands, for years, to protect eyes against paint spray, gases, dusts, fumes, smoke. Can be worn with any make respirator. Frames are of soft, pliable rubber that gives air-tight fit on any shape face. A few drops of water placed in patented groove keeps fog from forming on inside of single lenses. An easy nod and shake of the head keeps lenses clear indefinitely.

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H. S. COVER, South Bend, Ind.

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Score Card for Scaffolds

(From page 35) bucks or saw horses, and are costly, inefficient, and unsafe when used as scaffolding.

Construction: Wood bucks, normally constructed of 2 x 4 or 2 x 6 lumber, are five feet long and approximately two feet wide at the base and 30 inches high.

It takes approximately 25 feet of 2 x 4 or 2 x 6 lumber to construct the wood buck with diagonal leg bracing.

Methods of Use: Wood bucks are usually placed approximately six feet apart and are then planked to provide a platform on which the next run is placed.

Design and Efficiency Weaknesses: Wood bucks are not safe because they do not lend themselves to adequate cross bracing, and as a result are easily tipped over.

They are hard to transport because of their bulk.

They are hard to level and, in addition, provide a small contact area with the ground or planks on which they rest.

They are in constant need of repair and replacement because of handling damage and expansion and contraction due to weather conditions.

They have no provision for guard rails.

Wood bucks are certainly considered unsafe at any elevation over 20 feet.

C. Single Pole: Single-pole scaffolds were developed to provide platforms for workmen at higher levels than those of either wood rings or bucks. They are still used at some locations, but are time-consuming in their erection, require abnormal amounts of bracing lum-

(Continued on next page)

(Advertisement)

. . . HEY CURLEY . . . YA DON'T HAVE TO THAW OUT THAT EXTINGUISHER . . . IT WON'T FREEZE!

You needn't worry about high or low temperature extremes with Ansul Dry Chemical Fire Extinguishers. All Ansul Extinguishers are tested and approved for –40°F operation. Special Low Temperature models are available for –65°F conditions. These same extinguishers can withstand prolonged exposure to temperatures up to 160° above zero. Think of the savings these features give you! No heated cabinets. No freezing of unprotected extinguishers left outdoors in winter weather. No accidental discharge due to exposure to high temperatures in a boiler room, etc. Still Ansul gives you the best fire protection money can buy.

SEE PAGE 7

Quick Folding Emergency Stretcher

CUSHION WHEELED COTS
EMERGENCY STRETCHERS
ALL TYPES
STAIR-CHAIRS FOR BRINGING PATIENTS OUT OF DIFFICULT PLACES
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ber, and are, therefore, costly.

Construction: Single-pole wood scaffolds, because of their selective use at high elevations, are usually constructed of 4 x 4 lumber braced with a considerable amount of 1 x 6 lumber. The 4 x 4's are stood on end and braced to the structure and to each other. Planks are then spread across horizontal 1 x 6 or 2 x 4 lumber wherever needed. The amount of lumber required far exceeds in cost that of steel sectional scaffolding when the 75% salvage factor is considered.

Methods of Use: Wood single-pole is constructed in a haphazard manner at best. Vertical and horizontal members are so placed as to provide platform supports approximately every six feet at the working level. It is a permanent non-mobile unit usually tied in to the structure on which work is being done.

Design and Efficiency Weaknesses: It is obvious that in constructing single-pole scaffolding to provide platforms at 25 feet of elevation or more, the vertical 4 x 4's must be spliced together. This splicing and subsequent bracing is both a laborious and costly task. In addition to the above, the weight-carrying capacities vary with the type of lumber used and the height of the scaffolding.

The labor costs involved in the construction of wood single-pole scaffolds together with the lumber costs is prohibitive by actual comparison.

In dismantling wood single-pole scaffolding, the lumber is only about 75% salvageable.

Additional labor must be employed in withdrawing nails and cleaning mortar from the lumber thus salvaged.

Wood single-pole scaffolds are not suitable for industrial maintenance work for obvious reasons.

Conclusions on Wood Scaffolding

Most of the scaffolding injuries suffered by workmen are a result of the failure of wood scaffolding.

The largest and most successful contractors in the world have agreed that wood scaffolding in construction, both large and small, is prohibitive cost-wise, unsafe, and inefficient. As a result, contractors, even in areas where the cost of lumber is sub-normal, have turned to steel sectional scaffolding.

Steel Sectional Scaffolds

Steel sectional scaffolding was first conceived for general use early in the thirties. Its construction since that time has been based upon the requirements of efficient scaffolding —quick erection, with less labor cost, and stressing, of course, the safety feature.

This radical change in the construction of above-the-ground platforms was soon to be accepted by contractors from coast to coast. Its adaptability for use in areas which were otherwise hard to scaffold safely was immediately recognized. This versatility has led to the international use of metal-frame type scaffolding by contractors, engineering firms, and maintenance men. Metal sectional scaffolding has been recognized by state safety depart-

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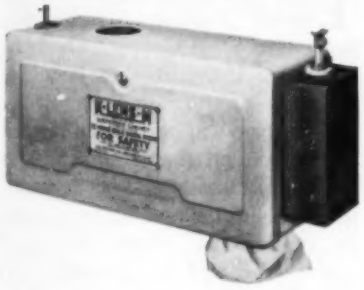
Stops fogging and steaming of eyeglasses and goggles—glass or plastic. Easily applied, K-LENS-M Anti-Fogging Liquid forms an invisible coating that resists formation of fog or moisture on lens surfaces . . . brings clear vision to eyeglass wearers under severe conditions of hot steaming vapors, freezing temperatures, humid summer heat, or body perspiration . . . overcomes hazards of fogged goggles . . . increases worker efficiency and safety.



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ments and has been accepted by the National Safety Council for use wherever a platform is required above the ground level.

It is suggested that in the use of metal scaffolding, Safety Codes be consulted and strictly adhered to. If the user has carefully selected the scaffolding which he is to use, he will have considered ultimate load-carrying capacities, the type of metal used in the construction, the quality of welding in its fabrication, and the availability in the event of any additional scaffolding requirements.

The above points, if considered in the purchase or rental of scaffolding equipment, will provide workmen with lifetime equipment which is infinitely safer than anything formerly used in the construction industry.

Pictures by courtesy of Safway Steel Products, Inc.

WHAT'S NEW?
See pages 66–68

"Your Plant a Target?"

AN ILLUSTRATED booklet entitled "Is Your Plant a Target?", explaining a new program for industrial dispersion designed to minimize the effects of any atomic bombing attack on the United States, has been issued by the National Security Resources Board.

The Government called upon local groups to draw up their own voluntary plans for locating new industry away from present concentrations, and said the distance need not be great—as little as 10 to 20 miles, and on rugged terrain even less. The brochure emphasizes that industry can qualify for federal incentives by locating new plants within local marketing areas. It contains nothing, however, to discourage construction of new defense industry in areas far remote from the larger centers.

The federal incentives available are: certificates of necessity for accelerated tax amortization, allocation of critical materials for construction, defense loans, and defense contracts. In providing these aids, which have been in use since the start of the defense mobilization program, the Federal Government is to consider satisfactory dispersion "to the greatest extent practicable."

The booklet points out the potential role of local committees in taking the initiative for deployment of industry in their own areas. It tells what kind of area is suitable for small groups of plants, and points out step-by-step how local committees can get a dispersion program on its way.

As the first step in local procedure, the booklet suggests the organization of a "task force" through the leading civic association, to include representatives of industry and labor, the professions, and government—"men who are public spirited, realistic, experienced in dealing with problems affecting all groups and interests."

Transportation Safety

"Tenigue" on the Road

MODERN turnpikes and expressways are creating a travel tempo beyond human capacities, and no decrease in traffic fatalities and injuries can be expected until fatigue is recognized as a major factor in our highway holocaust. This statement was made by L. S. Harris, Executive Director, American Association of Motor Vehicle Administrators. He advocated frequent "coffee stops" as a symbol of relief from driving strains in the same manner that the "coffee break" has become almost a ritual in the lessening of pace in the marts of business and industry.

"World affairs, economic strains and the general tempo of modern living tend to keep nerves at an angry tension," Mr. Harris said, "and nowhere is this more in evidence than on the streets and highways as vehicles move at snail's pace in crowded urban areas and too fast on open rural roads."

Pointing out that driving tension and fatigue has been aptly called "tenigue"—a new national disease —Mr. Harris said that it has not been given the attention it deserves as a major factor in accidents. "In fact," he added, "fatigue has been largely overlooked in our search for an answer to our tragic toll of deaths and injuries in highway travel."

Citing studies of passenger car and truck drivers, the latter under Federal supervision, Mr. Harris declared that there is ample evidence that periods of long driving, under current traffic conditions, tend to make drivers accident-prone and a threat to the safety of others on the highway.

Unsteadiness, lack of hand and eye coordination, slowness in mental observations, such as detecting the color of traffic signals, and slow reactions to traffic hazards were cited as definite results of fatigue caused by long hours at the wheel.

"Stress on fatigue, with 'coffee stops' as a reminder, may appeal to that public opinion so long needed in support of constructive efforts to lessen our alarming toll of highway deaths and injuries."

Maintenance Course

THE tentative program for the Motor Vehicle Maintenance Supervisors Short Course to be held at Purdue University has been released by the planning committee. This program will be directed toward supervisors and shop foremen who are responsible for truck fleet maintenance. Fleet representatives from the midwest will attend the short course scheduled for January 7 to 11, 1952.

The tentative program includes discussions of: tires; brakes and braking systems; batteries, generators and voltage regulators; paint and preparation for painting; laboratory demonstration; piston rings; analyzing engine performance; fuels and lubricants; laboratory demonstration; job instructions and training; carburetors and valves; transmissions and differentials; and selection of equipment.

The instructors in these subjects will be selected from men who have had wide experience and have the necessary technical information to help the individual students with problems they may wish to bring before the group.

Professor H. J. Buttner of the Department of Mechanical Engineering and M. M. McClure, Coordinator of Adult Education, with the cooperation of fleet operators are responsible for arranging the program for the short course. Information may be received by writing to M. M. McClure, Engineering Adm. Bldg.

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FLEXIBLE STRETCHERS
Every casualty, no matter how slight or how serious, can be made worse by rough or improper handling.
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Approved Respirators

(From page 32) superiority of an individual respirator must come from the manufacturer and should be based upon his own test data rather than test data that he may have observed when witnessing approval tests in the Bureau's laboratories.

Bureau of Mines approvals are issued with the understanding that the manufacturer will make his respirator according to drawings, designs, and specimens that he has submitted to the Bureau and that have been considered and included in the approval. If he desires to make any change in the design of a permissible respirator, he must first obtain the Bureau's approval of the change.

The Bureau checks the approved respirators that are on the market from time to time to ascertain whether or not they conform to the approved device in physical make-up and performance. Up to 1950, this checking had been rather infrequent because of the limited number of employees in the Respirator Section. Since then, more employees have been added, and marketed approved respirators have been tested and will be tested more frequently. If, on the basis of such testing, it is found that the device differs from that approved either in design or performance, the manufacturer is notified to take immediate steps to correct the situation. If the performance of the device is faulty, it may be necessary for the Bureau to inform the manufacturer to cease selling the device until the Bureau has found that its performance has been brought up to standard and can be maintained at this level. The Bureau cooperates in every way with the manufacturer to discover the cause of the inadequacy, to help correct it, and to retest the respirator as promptly as possible so that production may be resumed. All such instances noted to date have been due to laxity of control and inspection rather than to intentional cheapening of the product. The Bureau of Mines has the authority to rescind an approval for cause but has not been forced to take such drastic action as yet.

Safety is habit forming

Safety is contagious—

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The most frequent request received is for information regarding the selection of respirators for specific applications. Table 1 should aid a prospective user in making his own selection in most instances.

Another frequent request is for information regarding the shelf-life of gas mask canisters. Data relative to this matter are being collected and reviewed and will be published in the relatively near future.

The manufacturers of respiratory protective devices, in cooperation with the Bureau of Mines, have made available a wide selection of approved respirators to meet virtually any situation in which such protection is needed. This is only half of the job. There remains for all concerned the important task of educating people in industry, from management on down to the persons who actually will be wearing the respirators, regarding the proper selection, use, and maintenance of these devices.

From an address presented at the 21st Annual Greater New York Safety Convention.

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Right Size
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HOFFCO-VAC
Heavy-Duty Portable
VACUUM CLEANERS

Designed to Remove Dust from Larger Areas of Floors, Walls and Overhead Surfaces *at Lower Cost!*

Choose from four sizes (1½, 3, 5 and 7½ H.P.) . . . available with T.E.F.C. Class I and Class II motors for hazardous locations. Also, a gasoline engine powered 5 H.P. model. FREE Engineering Survey of your dust conditions to help you select the right Hoffman portable for your specific requirements.

STATIONARY SYSTEMS IN A WIDE RANGE OF SIZES

Hoffman Also Builds Multi-stage Centrifugal Blowers and Exhausters, for Air or Gas, in a wide range of capacities, pressures and vacuum.

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SAFETY MAINTENANCE & PRODUCTION Salutes a Safety Idea for JANUARY

Signing Up for Safety

TO FIND effective ways of reminding employees to be alert to accident hazards and of making them really think about safety is a problem faced by all types of industry. An unusual solution to the problem has been worked out by the Sinclair Refining Company by giving a new twist to former methods of safety education and by utilizing new types of display equipment.

The Sinclair solution combines the use of giant-size changeable-copy signs with a safety slogan contest. Produced for Sinclair by Wagner Sign Service, Inc. of Chicago, the signboard, which measures 10 feet long and is 62 inches high, is constructed of porcelain steel panels. To attract attention these outdoor signs have 8-inch red and green plastic letters.

The safety messages are changed at least twice a week and employees are awarded prizes for submitting

the best slogans. By means of the slogan contest, employees are encouraged to give serious thought to accident prevention, and their reward is not only the prize award and the satisfaction of seeing their slogans on display but also that by their own thinking they may have prevented themselves from having future injury.

Built-in Safety

(From page 20) story constructions, should be of adequate structural strength. It costs very little more to increase the allowable load capacity when designing a new floor. In most plants the occupancy changes many times during the life of the building, so the extra safety factor is a good investment. The floor surface should suit the occupancy and traffic conditions. If this provision is observed, any sound structural material will provide a good floor. The problems arising with most floors stem from misapplication and abuse.

Floors should be kept free of tripping hazards and be provided with proper drainage if subject to liquids. Where the floor above serves as the ceiling for the room below, thought should be given to protection from dust, dirt, leakage, spattering and similar hazards that might result from the occupancy above.

Obstructions—Every factory has its share of obstructions. Pipes, conduits, drains, valves, fire apparatus, heaters, etc., are a necessary part of the plant structure yet they are often a nuisance or even a hazard. It is very often not too difficult to locate these obstructions in inconspicuous places when the plant is being laid out. Also proper shrouding can eliminate much of the eyesore effect and hazard potential. In planning the layout, each space-occupying fixed object should be carefully provided for to make sure that there will be a minimum of inter-

ference with persons or materials. Head room is of particular importance.

4. Equipment Arrangement and Guarding

The arrangement of the equipment within the plant is probably the function which most persons look upon as the plant layout engineer's predominate field of operation. This is largely true, and it is also the one field in which he can plant the most "booby traps" or eliminate them. It is the cardinal principle that the layout engineer should determine the exact requirements of each work station and then make adequate provision for each space-occupying item. This space factor may be fixed, as in the case of an item of equipment, or it may be a variable, such as service access, material clearance, temporary storage, or maintenance provision. It is the failure to provide the proper space factor that germinates accidents.

While the plant layout engineer cannot be held responsible for the failure of supervision or operators to utilize space as planned, he can anticipate changing conditions and provide for normal requirements. Since statistics show that about 40% of all industrial accidents are traceable to some source of plant layout or material-handling defect, this is a very fertile field for safety development. Proper work station layout will do much to reduce these accidents. Here are a few points worth remembering.

a. Always allow enough space for efficient operation and safety. But do not allow too much space, as this is wasteful and leads to poor housekeeping and ultimate hazards.

b. Be sure to layout the complete work station instead of only the major item of equipment.

c. In planning the work station, be sure to provide for all necessary handling and storage equipment so that the operator can work safely as well as efficiently.

ANOTHER SAFETY DAVIS DIVISION FIRST-AID "FIRST"!

Davis, originator of the D-Carton First Aid System, pioneers another long-felt first aid need—a dressing that can be applied easily and quickly with one hand by the injured person himself.

Impregnated with a newly developed adherent substance the bandage with cotton lined 2" x 2", or 2" x 4" gauze pad stays put without slipping or unwinding.

CAN BE PUT ON WITH ONE HAND!

- Self-adhering—does not adhere to skin
- No tearing, no cutting, nothing to fix
- Costs no more than a conventional bandage-compress
- Packaged for the Davis D-Carton System
- Individually wrapped and sterilized

SAFETY DAVIS DIVISION

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Write for Bulletin #321

DAVIS EMERGENCY EQUIPMENT CO., INC.

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d. While most machine tools are provided with safety guards by the manufacturer, the special application by the user, addition of auxiliaries or requirements of installation may create the need for additional guarding. Be sure your work station layout provides for it.

e. Always have the safety engineer approve the layout before installation is started.

5. Painting and Lighting

In the past ten years we have learned much about the value of color dynamics and compatibility of painting and lighting. Since you must light and paint your plant, why not do it right and reap dividends on your investment?

While we may not realize it, the average operator's eyes work just about as strenuously as his hands in the course of a day's work. In yester-

Asbestos Gloves for HOT Jobs

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There's a *Big* difference between Asbestos Gloves and you can *tell* the difference when you get Industrial's No. 200-14 asbestos gloves. *The quality stands out* in your hands and *on* your hands. Seamless one piece construction from tip to top. No seams at the wrist or working edges to pull out or burn out just when protection is needed most on a hot job. Made lined or unlined. Standard lining is an 8 ounce knitted cotton material anchored in each finger and thumb. Knitted wool or industrial wool lining on request. *The quality stands out* in the correct design and proportions of the big roomy pattern that allow a cool, comfortable fit. Double sewn throughout. Standard 11, 14 and 23 inch lengths. Other lengths and many special types of asbestos gloves and mittens are available both plain and leather reinforced. The quality of all these items stands out because they are all made of sturdy, close woven 2½ pound per square yard Underwriters grade Asbestos cloth.

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years we took cognizance of abuse to hands and backs, and provided mechanical aids to assist and protect them. We protect eyes too from mechanical injury, but we have done far too little to relieve them from physiological injury—or more commonly known as "eye strain."

The greatest aid to combat this usurp of eyesight is correct light and color. Your plant "see-ability" problem, of course, requires local study but the rewards are well worth the efforts. With proper lighting facilities, accidents will be reduced, productivity will rise and the work force will be generally more content, for eyestrain is a source of many ills and much fatigue. A tired worker is a careless worker. In planning the layout of your plant, therefore, give thought to:

a. The level of illumination required at the work station for good "see-ability."
b. The quality of light as well as its quantity.
c. The color scheme of the building and equipment surfaces in the area of the work station. They should provide the following effects:

1. Good lighting reflectivity without brightness or glare.
2. Contrast to make objects easily distinguishable.
3. Pleasantness of surroundings.

6. Fire and Explosion Prevention

While most states have codes which require industrial plants to take precautions against fire and explosion hazards, the letter rather than the spirit of the law prevails. The plant layout engineer should be familiar with all the materials and processes used in the plant operations. Only in this way can he be sure that adequate precautions are being designed into the layout. Exposure or hazard potential is always a relative thing in industrial plants depending on the precautionary measures taken. Some of the most destructive materials which we possess are being handled daily in comparative safety because proper measures have been taken to prevent

Pre-Planned Work Station—The operator can devote all of his time to productive operations and do so with comfort and safety. All the equipment and materials needed for his job are within a convenient working radius.

accidents. Fire and explosion are potential hazards in nearly every industrial plant. When the plant buildings are first built, the architect or engineer will have provided reasonable safety features, applying to the known occupancy at the time. But plants are seldom static in utilization, and as occupancy changes, the plant layout engineer should see that the necessary changes are made in safety provisions for fire and explosion protection. Some of the things the plant layout engineer should constantly keep in mind are:

a. Should sprinklers be provided to protect the building or contents or both?
b. Should sprinklers be avoided due to possible greater damage from water rather than fire?
c. Is there sufficient ventilation to prevent the accumulation of an explosive atmosphere?
d. Are hazardous areas properly partitioned off to prevent spread of the holocaust in event of fire or explosion?
e. Is there a sufficient number of fire extinguishers of proper type strategically located throughout the plant?
f. Is the potential danger great enough to warrant a private plant fire department?

7. First-aid Facilities

In modern plants of fair size, the first-aid facilities today approach the standard of small hospitals. Indeed, to my experience in one plant, the facilities and service were so good that the local medicos com-

Revised Code on Mine Electrical Equipment

A REVISED edition of the American Standard Safety Code for Installing and Using Electrical Equipment in and about Coal Mines, M2.1—1951, has been approved by the American Standards Association. The increased use of mechanical mining, loading, and haulage equipment in recent years has changed the operating conditions to such an extent that a complete revision of the 1926 standard was necessary.

Safeguards for reducing fire, explosion, electric shock and other hazards in and about coal mines are incorporated into this edition. Steps necessary in the selection, installation, operation, inspection, and maintenance of electrical equipment and circuits are indicated.

The code is designed to give the mine electrician and mining engineer an up-to-date set of concise rules that are easy to understand and practical to follow all in one volume.

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plained that they were being deprived of patients. It is hardly necessary to carry the installation to such an extent, but facilities for first aid are necessary in every industrial plant.

The scope of the installation will vary with every plant and the potential dangers of the business involved. Most modern plants of small size have at least one good size dressing station, ample lavatory facilities, and a cot room. Many today have a full time nurse on duty and contractual arrangements with a local doctor for service. If a full time nurse is not engaged, several employees who have extensive first-aid training are always available. From this modest start, plant first-aid departments increase in size, scope and facilities up to twenty room layouts. Usually such installations accommodate employee-examining rooms, segregrated waiting rooms, doctors' and nurses' quarters, and offices, medicine

(Continued on page 53)

A well planned shipping department. Conveyors bring the goods directly to the railroad car or road trucks, which are depressed to allow floor-level access. Lighting, weather protection, drainage, accessibility have all been considered in designing the area.

Working conditions in processing industries can be both safe and pleasant. In this plating department, the lighting, ventilation, interior finish of walls and general arrangement are conducive to efficient production by providing a comfortable working environment.

Learning the hard way

A QUICK DESCENT

AN EMPLOYEE was supposed to rewire a bank of three transformers that had just been mounted on a pole. He placed an extension ladder against the rounded surface of the middle transformer, climbed the ladder to the fourth rung from the top, and secured his safety belt to the ladder. Without securing the ladder, he wired the transformer on his left and then shifted his weight to do the same for the right-hand one. The ladder also turned on the rounded surface and fell to the ground. The worker struck the ground on his back and severely bruised the lumbar region. Investigation showed that the job was poorly planned and too hastily carried out. The ladder used was too short for the job and therefore had to be set at too steep an angle. Too willing to take a chance, the employee did not bother to lash the top of the ladder to the transformer or to have someone else steady it for him.

WET FLOOR HAZARDS

AN EMPLOYEE was pushing a hand truck loaded with bagged material. It had been raining, and although efforts had been made to dry the loading platform, the flooring was still slippery. The employee slipped and fell. The hand truck struck his ankle, resulting in a sprain. This type of accident points up the great need for abrasive flooring surfaces in areas that are wet or oily. Abrasive flooring is available in many forms such as metal, fabric treads or sheets, and painted coating.

MISSING DOCKBOARD

A LABORER from another building was loaned to the warehouse for loading operations of a freight car. While at work on the loading platform, he stepped between the car and the platform and fell to the ground. Fortunately his injuries were confined to a skinned elbow when his arm struck the platform. Investigation showed that a dockboard should have been provided to prevent such accidents. This necessary safety equipment has since been made available and instructions given as to its use.

POOR MAINTENANCE

POOR maintenance is often the direct cause of an accident. For example, an employee was carrying a one-gallon jug of water in one hand and a one and one-half quart aluminum water container in the other hand. He slipped on a flight of stairs, falling backwards and striking his head on a stair tread. Even though he fell about seven steps down the stairway, he was lucky enough not to be seriously injured. It was found, however, that there was a considerable accumulation of wax on the stair treads which apparently caused the employee to slip. In this particular case too the employee would have done well to arrange his load or make two trips so that one hand would be free to hold onto the handrail.

Built-in Safety

(From page 51)

rooms, X-ray rooms, etc. The only suggestion I can offer is that the facility should be designed on the basis of adequate requirement to meet the needs of the industry and the plant population. It is better to have a little too much than not enough. Employees today demand adequate health protection.

8. Flow of Material and Good Housekeeping

The old adage "a place for everything and everything in its place" is good advice for every industrial plant management. It is the plant layout engineers' responsibility to provide the place, and the supervisors' job to keep things there. If this team does a good job, accidents and costs will be reduced. In plants where the housekeeping is good and material flows smoothly from operation to operation, the safety record is usually good. There is no magic formula for the solution of this problem. You must simply work at it all the time.

There are some points for the plant layout engineer to think about in preparing the layout, however. He should:

a. Provide space at every work station for all things that occupy space whether they be plant equipment or material in process.

b. Know how every piece of material can or will be handled throughout the plant from receiving to shipping. There is a great tendency to just leave it up to the boys in the shop to move it the best way they can.

c. In your layout, keep in mind that waste materials must be removed from the plant constantly. Many engineers neglect to provide efficient waste removal facilities, which fact accounts for the vast accumulation of junk in many plants. Remember that it costs just as much per labor hour to remove waste material as to move productive, saleable material.

PLANT SAFETY
... the Supervisor's Role

The supervisor's importance in any program of industrial accident prevention is stressed in our booklet, "Safety As It Applies to Supervisors." Drawn from the wide experience and professional knowledge of Marsh & McLennan's safety engineers, the information and recommendations presented are being applied by many progressive companies in varied industries throughout the United States and Canada. Write for your copy today.

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9. Handling and Storage

We now reach the apex of this discourse. As stated earlier, material-handling accounts for more industrial accidents than any other plant operation. If an improvement in handling had no other incentive, the reduction of accidents, which in turn reduces costs, would in itself provide the motive.

Basically, there are two sources of material-handling accidents. They are:

a. Injuries due to the lack of proper or adequate mechanical aids to perform the operation.

b. Injuries due to faulty mechanical handling equipment.

There is, of course, a third source which does not involve equipment. This is the human failing or at least we like to call it that.

The plant layout engineer figures

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in both the basic sources of these accidents. In the first case he has failed to provide the proper and adequate equipment to perform the operation. In the second case, he has failed to see that the equipment provided was properly designed and installed.

We could debate at length just how far the plant layout engineer's responsibility extends in these

(Continued next column)

matters. You may be inclined to say that these responsibilities fall upon the operating or maintenance personnel. Perhaps you would be correct. But to the victim of an accident, particularly of a lost-time accident, such details offer little comfort. We should not be squeamish about party lines and spheres of responsibility. If it is in the interest of safety, or of better plant conditions, it is everyone's job. There should be a definitely fixed responsibility in every plant for each of these things, but safety or improvement of any kind should not be ignored just because it is "George's job."

Material storage is also a frequent source of accidents. When you consider how often material is picked up and set down in its path through the plant, there must be a right way to do it. Unstable piles of material, blocked aisles, material placed in such a manner as to require reaching, twisting, turning or shoving, all lead to accidents.

Today there are many hundreds of devices on the market that enable operators to handle and store material without physical strain. It is the task of the planning engineer to become familiar with these "handling tools" and to engineer them into the layout design.

In summarizing, mention should also be made of visual aids in planning the plant. When people can see things, they understand them much better. Planning engineers, technically trained in the language

New Home of Iron Age

THE Iron Age Division of H. Childs & Co. Inc. has moved their general offices and warehouse into a recently completed building located at 1205 Madison Avenue, Northside, Pittsburgh 12, Pa. Effective immediately all orders for Iron Age safety shoes will be filled and shipped from this address.

The expanded activities of the Iron Age Division dictated the construction of this modern building. It replaces the former headquarters of the company in crowded downtown Pittsburgh.

Architects, material handling experts and consultants on business systems combined their talents in laying out floor plans and plotting procedures for the new structure to provide the utmost efficiency in processing and dispatching orders for safety shoes. Warehouse facilities are on two floors with receiving and loading docks provided at separate off-the-street levels. Attractive air-conditioned, sound proof offices are on the second floor. Iron Age visitors will find the new location is more accessible than the old and that ample parking facilities have been provided for their convenience.

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of engineering drawing, may have an excellent mental picture of the plant they are planning. But the many other persons who have a stake in the project do not necessarily share this understanding. The three-dimensional layout reduces all these mental pictures to one of common understanding. Everyone from janitor to president will have a better understanding of the proposed plant if he can see it in miniature. Safety does belong to those who plan for it.

From an address presented at the 39th National Safety Congress.
Pictures by courtesy of Westinghouse Electric Corp.

$500 in Prizes for Oldest Floor Machines

AWARDS totaling $500 in cash will be made on December 15, 1952. The money will go to owners of the oldest floor, rug or carpet scrubbing machines that are still in regular use. This search for the oldest floor machine is being made to celebrate the 25th anniversary of the Hild Floor Machine Co., pioneer manufacturers of floor maintenance equipment.

Official entry blanks may be obtained by merely writing a postcard to "Contest, Hild Floor Machine Co., 740 W. Washington Blvd., Chicago 6, Ill."

Any make of floor machine is eligible. All that's needed to enter the competition is to send in the make and serial number of the floor machine. In the event that a machine is declared a winner, proof will be wanted that the machine is still in regular use.

"This search should turn up some interesting information on the life of floor scrubbing machines under various conditions of use. Whatever information we get will be made available to any interested party," declares Fred C. Hild, founder and president.

Founded in 1927, the Hild Floor Machine Company has made significant contributions to the industry. Hild served as president of the Floor Machine Manufacturers' Assn. from 1946 to 1948. During the war years he served on the Advisory Committee of the War Production Board for the Floor Machine Manufacturers' Assn. which succeeded in getting floor maintenance equipment rated as essential for the war effort, with the result that materials were released for the continued production of floor machines.

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SEE PAGE 7

(Advertisement)

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We, as Americans, are justly proud of our productive ability—constantly introducing new machinery, new techniques to help keep us strong and free. But hovering over every operation is "Exposuritis," creating new hazards for the Industrial Worker. This leads to "time off," production leaks and high compensation costs.

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THE FUTURE SHOWS

Philadelphia, Pa.

January 14–17. The Third Plant Maintenance Show. (Convention Hall.) Clapp & Poliak, Exposition Management, 341 Madison Ave., New York, N. Y.

Milwaukee, Wis.

January 31–February 2. Tenth Annual Mid-Winter Safety & Industrial Nurses Meeting. (Hotel Schroeder.)

Atlanta, Ga.

March 2–4. Thirteenth Annual Southern Safety Conference & Exposition. (Biltmore Hotel) Braxton B. Carr, executive director, 2120 1st Ave. N., Birmingham 3, Ala.

Philadelphia, Pa.

March 4–5. Eighteenth Annual Philadelphia Regional Safety & Fire Conference and Exhibit. (Bellevue-Stratford Hotel) Roy M. Godwin, chairman, Philadelphia Safety Council, 17th & Sansom Sts., Philadelphia 3, Pa.

Boston, Mass.

March 17–18, Thirty-First Annual Massachusetts Safety Conference & Exposition. (Hotel Statler). Edgar F. Copell, Pres., Mass. Safety Council, 31 State St., Boston 9, Mass.

Detroit, Mich.

April 7–10. Twenty-second Annual Michigan Safety Conference. (Hotel Statler) Frederick W. Krupp, Executive Secretary, 174 E. Atwater St., Detroit 26, Mich.

Columbus, Ohio

April 15–17. Twenty-second All Ohio Safety Congress & Exhibit. (Neil House) James H. Fluker, Chairman, Div. of Safety & Hygiene, Industrial Commission of Ohio, Columbus 15, Ohio.

Chicago, Ill.

May 6–8. Twenty-ninth Annual Midwest Safety Show. (Congress Hotel) Joseph F. Stech, Manager, Suite 806, 10 N. Clark St., Chicago 2, Ill.

New York, N. Y.

April 1–4. Twenty-Second Annual Greater New York Safety Convention & Exposition. (Hotels Statler and New Yorker). Walter A. Gustafson, general chairman, Greater New York Safety Council, Inc., 60 E. 42nd St., New York 17, N. Y.

Asheville, N. C.

May 4–6. Twenty-second Annual North Carolina Statewide Industrial Safety Conference. (George Banderbilt Hotel) H. S. Baucom, Safety Director, North Carolina Industrial Commission, Raleigh, N. C.

Easton, Pa.

May 6. Twenty-fifth Annual Eastern Pennsylvania Safety Conference. (Hotel Easton) Harry C. Woods. Executive Secretary, Lehigh Valley Safety Council, 602 E. 3rd St., Bethlehem, Pa.

Baltimore, Md.

May 8–9. Statewide Safety-Health Conference & Exhibit. (Lord Baltimore Hotel) Joseph A. Haller, Executive Chairman Safety Health Conference, State Industrial Accident Commission, Equitable Bldg., Baltimore 2, Md.

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Foam Blankets Fire

(From page 28) along the water line. Either of these will add the proper amount of foam compound to the water stream.

Application of Foam

The quantity of foam required for extinguishment varies widely. In the case of small indoor tanks, foam to cover the liquid surface to a depth of a few inches may be sufficient. In the case of large outdoor tanks a depth of several feet may be necessary.

NFPA standards cover four methods of application of foam, either singly or in combination:

1. *By top side application of foam to the oil surface at the tank shell and allowing it to flow over oil surface.*
2. *By protecting the entire area of a room or enclosure so as to cover entire surface with foam.*
3. *By applying directly on the whole of the surface of the flammable liquid (and if necessary) on the area immediately surrounding the tank. In certain cases, foam spray nozzles may be installed in conjunction with fixed foam outlets on the tank or foam spray nozzles may be used alone.*
4. *Foam protection may be provided by means of hand hose equipped with play pipes either separately or in combination with systems described in 1, 2 and 3.*

Foam is more efficient when flowed gently on the burning surface, to avoid vigorous agitation. That is why foam outlets are often arranged to discharge at low velocity close to the surface protected.

The necessary rate of application of foam is determined largely by the method of application. Accordingly, foam generating capacity, foam outlets and the desirable amount of foam powder or mechanical foam fluid must be considered equally important in the design of a foam system.

A minimum application rate of ¾ gal. of foam per sq. ft. per minute is usually adequate if the foam is applied to the surface of the flammable liquid gently; under especially favorable conditions for fires in oils of low volatility, lesser rates of application may be effective. If the foam is applied in a manner which causes plunging beneath the surface, the application rate may be 1, 1¼ or 1½ gals. of foam per sq. ft. per minute. If foam streams are used, the necessary application rate will be greater.

Thirty-two thousand industrial plants went up in flames during 1950, to the tune of $155,750,000. The adoption of chemical foam and air-foam fire protection systems by a greater number of American industries could do much to reduce the current high industrial fire loss!

Photographs on pages 27 & 28 by courtesy of Pyrene Mfg. Co.; on page 26 by courtesy of American-LaFrance-Foamite Corp.

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The Right Cleaner

(From page 24) surface to increase slightly in luster. (2) Some bright-drying waxes effect so little change in the gloss of the prewaxed tile that it is difficult to tell how much, if any, of the wax has been removed during the washing tests.

It was concluded that dull, unwaxed tile would have to be used if any information was to be gained from these tests. Since no unwaxed tile was at hand, and since it is not seemingly possible to remove the factory coat of wax without ruining the tile, another approach to the problem was undertaken—the use of linoleum tile.

The linoleum tiles that were selected by the Wax Committee for wax coating purposes are six inch squares, and are black and unwaxed. While it is possible that they might be differently affected than asphalt tile during prolonged washing tests, this situation does not seemingly interfere with their use for the wash resistance and washoff tests upon wax coating. If the wax washes off, the test is over, and if the wax doesn't wash off, the tile is presumably protected. Furthermore, the very dull surface of these linoleum blocks is ideal for detecting any wax upon the surface. The gloss readings of these linoleum blocks of 1.6 to 1.7 (referred to black glass as 96% gloss) proved to be almost ideal.

A few preliminary trials furnished information that resulted in choosing a plan for this study.

Four linoleum squares were coated with 0.3 ml each of wax by distributing the liquid over the surface by means of a soft (not porous) rubber roller 4 inches wide. Some practice was required to accomplish a quick and reasonably uniform distribution. The squares were allowed to dry and remain at room temperature (about 25 to 27°C) for 24 hours, then a second coat of the same wax emulsion was similarly applied and this was allowed to dry during 48 hours before washing tests were begun. The total dry wax applied to the six inch square of linoleum was about 0.072 grams. This was equivalent to 0.288 grams per square foot.

Washing the Tiles

In a like manner, a total of eight wax emulsions were each applied to four black linoleum squares and simultaneously made ready for the washing tests. This made a total of 32 tiles that were involved in a treatment at one time. The waxes used for these tests were obtained from retail stores.

The gloss of each waxed tile was determined, using a Photo-Volt Reflectometer adjusted for 60° specular gloss. Then a portion of the tile was polished to the point of maximum gloss by means of a new piece of flannel cloth, and the readings for gloss were again determined. This was done as a result of experience as the polished surface gave additional information that will be explained later.

The same detergent solutions were used upon the waxed linoleum tiles as were used upon the asphalt tiles. One tile, representing one wax, was always washed with the same solution. In this manner, one brand of wax was subjected to a series of

washings with one kind of cleaning solution.

The complete set of tiles was washed, rinsed, drained for thirty minutes and then allowed to dry and stand flat with the treated side up for 24 hours, before a similar complete cycle was run again. The tiles were washed three successive times. Following the second and third washing tests, the gloss of the tiles were read before and after polishing. The data are shown in Table I.

These data contain some interesting information. For example, no one of the eight waxes attributed even a reasonably high gloss to dull linoleum. Buffing was required to acquire a lustrous finish. Much of the gloss obtained by buffing was retained during subsequent washing, in respect to certain of the detergents. These washing tests did reveal information we were seeking—namely, that some detergents remove but little wax while others are good wax removers. (These statements refer to wax coatings obtained from wax emulsions.) There is some evidence that the dual addition of pine oil and an alkaline salt produces a more energetic wax remover than Solution #3. Such combinations can well be an object of study for the purpose of making the best wax remover, keeping in mind of course, that no injury must be sustained by the tile. Conversly, detergents are available that do not excessively harm a good wax. A wax like "A," Table I, would not be termed a good wax by any user and, of course, it would fail to meet the wash resistance tests included in a number of specifications.

It can be equally objectionable to have a wax that cannot be removed by washing. Otherwise, the build-up or accumulation of wax in portions of a floor not subjected to wear could not be removed.

It was noted that in numerous instances the luster of the tiles, both unpolished and polished areas, was somewhat improved, compared with the second washing. A reduction of gloss would be expected with each successive washing. What happens is that the washing operation contributes a polishing, even of unwaxed tile. When each of four unwaxed linoleum tiles were given four successive washings, in the same manner previously used, they were improved in luster without wax, and this gain was obvious to the eye.

Wax Removal

Now, this fact brings out a condition not immediately obvious and one that could be objectionable. Supposing that repeated washings of a waxed surface would remove some ingredients of the wax film that would subsequently leave the wax deposit unremovable at some later time. Supposing that floors waxed with emulsions B, C, D & F finally reached a condition that necessitated cleaning off to the underlying tile. Is this possible?

In this instance it was, as proven by tiles C, D & F originally washed with detergent Solution No. 1. These were washed once with Solution No. 3 with the result that most of the wax was removed.

Pictures by courtesy of Davies-Young Soap Co.

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All Sellstrom welding lenses are accurately paired and the density is determined by infallible electronic eyes. They are packaged in our special "side by side" inspection packages. This same package is also used for all Sellstrom industrial goggle lenses.

Sellstrom industrial lenses are hardened in our own automatic electric oven. This assures a uniform degree of hardness which corresponds to the peculiarities of the various types of glass used in the manufacture of lenses. A "dust-proof" room is used for laminating safety lenses and also an exclusive method for plastic coating cover lenses. Every Sellstrom lens is inspected at every stage of manufacture, from the raw glass to the finished product. Nothing is left to guesswork.

We offer ten distinct goggle lenses: (1) Sel-XX welding; (2) Excelolite, heavy or thin; (3) Smoke green; (4) Cobalt blue; (5) Green welding; (6) Ruby red; (7) Sel-blue; (8) Sel-green, hardened; (9) Sel-safe, laminated; (10) X-L, hardened.

See our catalog No. 29 for a complete description of these lenses.

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industrial Hygiene

ASSOCIATE EDITOR
JACOB A. GOLDBERG, A.M., Ph.D.

Chrome ulcers on photoengraver's arms

FIVE STEPS TO DERMATITIS CONTROL

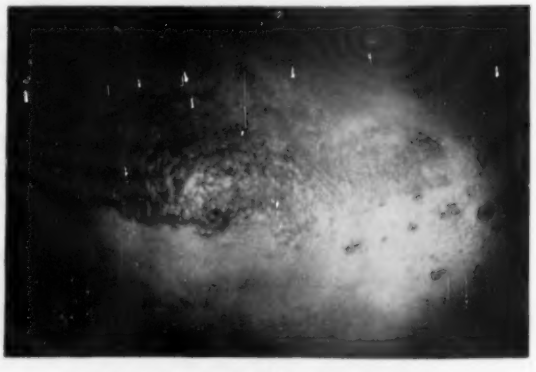
By JEROME M. GREENHOUSE, M.D.

Preventive measures are much more effective than therapeutic measures in cutting the astonishingly high cost of skin disorders.

NO BUSINESS man would knowingly allow an embezzler to remain in his employ. Still, from the first day man has engaged in gainful occupation, he has harbored and unwittingly sheltered a particularly expensive form of embezzlement in his crafts, stores, plants and factories.

Man's desire to better his lot from the stand-point of living standards, material gain, culture, and labor-saving appliances has caused him to experiment and work with an almost unbelievable array of metals, oils, plants, minerals, animals, etc. He learned very early that many of these substances he used had harmful effects on his body, particularly that part of the body with which we are directly concerned, the human skin. As early as 1500 A.D. Paracelsces in his "Morbies Metallicus" described changes in the skin caused by salt compounds and about the same time Agricola described ulcers seen among metal workers. In 1700 a clear, well organized volume by Ramazzini described the occupational skin disorders known to medicine in that day.

Dermatitis from contact with lacquer thinner



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Here then, is the occupational embezzler, the industrial archthief who steals man hours, medical office visits, and hundreds of thousands of dollars in workman's compensation every year. He is found in almost every industrial phase and lurks in the most innocuous looking occupations.

It comes as no surprise to the average individual that there may be skin disorders found in people who work with chemicals, caustics, acids, and certain drugs. It does come as a greater shock, however, to learn that bakers, bartenders, bath attendants, candy makers, artificial flower workers, grocers, spice workers and even ice cream makers are subject to and suffer annoying and frequently serious and agonizing disorders, each unique and peculiar to a given occupation.

High Cost of Dermatoses

There are a host of learned articles and books dealing with the diagnosis, treatment, and in some instances with the prevention of occupational skin disorders. Some industries, particularly some individual plants have made great strides in the prevention of occupational dermatoses in their particular fields. By and large, however, the care of the skin in industry, particularly prevention of trouble, has been a "hit-or-miss" affair. This gives rise to the obvious conclusion that industry spends a staggering amount of money every year for dermatological care. An expenditure which is to a large extent non-productive of profit, because it is a needless expenditure without return. A general statement which doesn't carry much weight? Perhaps, but look at these statements.

In Pennsylvania 3709 cases of cutaneous disease were reported. An average of 44.75% of occupational origin.[1] Hanfling, in an article on occupational dermatoses,[2] makes the statement that 3% of *all* workmen's compensation represents occupational dermatoses. The cost rises to the astronomical figure of about $100,000,000 per year. Other authors have reported various percentages of incidence of occupational dermatoses, but for our purpose it is sufficient to note that the incidence is high.

We come now to the primary question of this article. How may industry reduce the unreasonably expensive cost of dermatological health? The answer may be given in a single word—"control." The matter of obtaining control is of course more complex, but, no more so than the controls which are proving so effective in other occupational hazards such as safety goggle programs and safety shoes.

It is not necessary at this point to consider the predisposing or even the specific causes of occupational skin disorders. The parts that skin structure, race, perspiration, diet, age, sex, season, and filth play may be found in any standard text dealing with dermatology.

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For example, persons who perspire excessively are more prone to develop occupational dermatoses from solid substances which become irritants only in solution; dirt affects the pH of the skin; and vitamin supply influences the susceptibility of the skin to external irritants. It is significant to note that women are less apt to have severe dermatitis at hazardous tasks than the men because they are more likely to seek attention for a mild skin irritation than are men with a comparable disorder. Naturally work clothes saturated with irritants are a common source of skin disorders.[3] It is sufficient therefore that we merely take cognizance of the fact that these factors are important and we can therefore proceed to the specific problem of control.

Control of Conditions

This author has, as have his colleagues, encountered a great number of occupational dermatoses which need never have occurred—in fact, would never have occurred—had places of employment exercised proper dermatological care. This is readily demonstrated by the fact that sometimes minor changes as to substances used in a given operation prevent occurrence of a given condition. Since control is so obviously effective, isn't it about time that industry began exercising it? It is only with these preventable dermatoses that one takes issue. So long as we are in contact with dermatogenic materials, there will be occupational dermatoses. My question is, "Why tolerate such excessive numbers of these cases?"

One major film company cut the incidence of dermatitis from 75% to 10% through the use of controls. What one industry has done so effectively, others can do to a greater or lesser degree. It is quite obvious that not every plant or independent industrial house can retain a full- or even part-time dermatologist. However, there is nothing to prevent two or more small plants in identical operations from combining forces, thereby obtaining dermatological control.

Let us consider for a moment the chief causes of occupational dermatitis. There are five main causes which may be classified as mechanical, physical friction, pressure, trauma (heat, cold, x-ray, radium chemical, poisonous plants) biological agents (bacteria, fungi). Naturally each industry is faced with a different set of problems. The grinding wheel operator faces an entirely different set of industrial hazards than does the fabric worker with his dyes. The laborer with his barber's itch certainly presents a problem different from the candy maker with his oils, or the machinist with his abrasives and oils.[4,5]

As we progress further we find that the differences do not stop with different occupations and substances but that the various substances themselves exert their own peculiar effects upon the skin. The Keratin solvents, which are alkalies, have a tendency to destroy the protective outer skin; the petroleum solvents have their effect on the fats and oils, while the heavy metals tend to cause a precipitation of the proteins.[6]

Steps to Be Taken

What then can industry do? How may this unnecessary expense be reduced?

First—large plants, whose size of operation, variety of operations and number of employees warrant such a step, should retain a staff dermatologist. Those plants which, because of size or limited operations do not require or cannot afford such affiliation, should combine with other organizations in allied fields thereby availing themselves of adequate supervision.

Place the need for dermatological supervision foremost because without some sort of supervision, the lack of control becomes a bewildering maze.

Second—The dermatologist so retained should receive from a given plant or allied plant a complete report as to the operations in the plant, machinery and substances used, and whenever possible a report on the incidence of dermatoses in the plant—in short a dermatological history. He should familiarize himself with the plant.

Third—The dermatologist should obtain from the suppliers of substances, where necessary, the structure, derivations, etc., of all chemicals, etc. used in the plant.

Fourth—This step is of major importance. It is the process of setting up the basic skin-health plan. If not properly done, it will cause the failure and break-down of the skin program. After (To page 64)

THE INDUSTRIAL Nurse

EDITOR

ROSAMOND J. WEBSTER, R.N., A.M., Ph.D.

Too Tired

ALL observers of men and women workers readily recognize those individuals who are poor workers because they almost always complain of being "too tired." Such men and women have a poor work record, tend to have a high absentee record, and will change jobs frequently if they can. Much of this tiredness is emotionally conditioned. The apparent weakness and easy fatigability cannot be accounted for, in many instances, on a physical basis. Progressive weakness, debilitation, and increasing rapid fatigue as a result of physical effort may be indicative of anemia of some origin and chronic diseases of many types. When emotionally conditioned these symptoms are inconsistent in their relationship to exertion and are likewise difficult to explain physiologically. They appear in association with periods of emotional stress, and relate more closely to what is demanded of a patient or to his emotional reaction in a given situation. Such an individual may be too tired to do anything or feels himself "worn out all the time." He may suffer recurrent and sudden episodes of weakness, often accompanied by giddiness, "blacking out," mental confusion, palpitation, respiratory difficulty, sweating or trembling. The diagnosis of emotionally conditioned illness depends on a large number of subjective and objective observations which at times are unmistakable but which at other times are sufficiently subtle to make diagnosis difficult. Headaches that occur with frequency, gastrointestinal symptoms, pain or aching in muscles of the neck, back, chest or extremities may be frequent manifestations of excessive emotional tension. They may indicate an individual who is driving himself too hard, or who is forced to restrain aggressive impulses which have accumulated. This may involve a marital partner, such as a nagging wife, an irritating fellow worker, or a critical foreman or supervisor. The industrial nurse in her wisdom growing largely out of experience should learn to spot these people and help them if she can.

Glaucoma

NEWSPAPERS are ever on the alert to pick up newsworthy articles in technical journals of interest to their readers. A recent article in the Journal of the American Medical Association dealt with the proposal to screen industrial workers for glaucoma. The same procedure was of course suggested for all adults. The particular report dealt with the mass screening of 10,000 persons. The incidence of unknown and undisclosed glaucoma in the age group 40–65 was found to be 1.53 percent. The proportion found in need of immediate medical attention would have been much higher if the age distribution of those tested contained more individuals in the 60–65 age groups. Likewise, a large number over 65 would have increased the percentage still further. The investigators estimated that the incidence of undiscovered glaucoma in the population is about 2 percent. The recommendation was made that all physical examinations in industry should include the simple test for glaucoma. In visits to many medical departments in industrial and commercial establishments, not one was found to perform this test routinely or even occasionally.

Perhaps the recent article and the attendant newspaper publicity may alert some such departments to give attention to a problem that will become increasingly serious with the aging in the industrial population. With labor shortage in many parts of the country, this matter may even become somewhat acute. As all nurses know, glaucoma is a disease of the eye characterized by increased intra-ocular tension, sufficient to damage the contents of the eyeball. Primary glaucoma occurs independently of clinically demonstrable antecedent ocular disease. Secondary glaucoma may follow pre-existing ocular disease, accidental injuries and ocular operative procedures. The industrial nurse can play an important part in stimulating and steering middle aged workers to have their eyes examined for possible glaucoma if such examinations are not routine in her plant.

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Overweight

STUDIES over a number of years by medical and statistical executive staffs of a large insurance company indicate that one of the subtler and more serious hazards of our time is obesity. It develops so gradually and under such pleasurable circumstances that treatment is often difficult. The victim, feeling almost hopelessly trapped in his own fat, tends to rationalize his condition. Not only can obesity become a physical impediment in itself, but it also may predispose its victims to heart disease, diabetes, liver disease and other complications. The high level of national income has permitted many persons to indulge their desire for food and drink and too often this means high calory foods. The recent high cost of first class protein foods has favored increased carbohydrate intake. It is estimated that at least 20 percent of the population over 30 are overweight, including, in addition, many younger people. The number of obese adults, 20 percent or more overweight, totals over five million. Overweight tends to shorten life and is an etiological factor in several principal diseases. Particularly important is the relationship between the accumulation of excess weight and the development of cardiovascular disease. There is clear evidence that hypertension and degeneration of the heart and blood vessels are more common in the obese than in others. More than 8 out of 10 diabetics are overweight before the onset of the disease. Certain forms of arthritis are commoner among those who are overweight. Their mortality for cirrhosis of the liver and appendicitis is above normal. The condition impairs prognosis of those with asthma, bronchitis and many other conditions. Through these and other insurance statistics it is evident that obesity is a large public health problem. Weight control is a logical approach to the maintenance of health and prevention of some of the major diseases of middle and later life.

Five Steps to Dermatitis Control

(From page 62) the pertinent facts are obtained, the dermatologist should work in close alliance with the general medical director, the chemical division, the safety engineer, the nurse, aid-men, and personnel department. Through his co-operation with the people he will be able to:

1. Substitute lesser for greater dermagenic substances, such as spindle oils, caustics, chemicals, etc.

2. Where substitution cannot be made, provide, recommend or if necessary design proper protective clothing.

3. Recommend all necessary safety equipment.

4. Prescribe the proper ointments, creams, lotions, and cleansing agents for the prevention of dermatoses.

5. Where indicated and through personnel employment records detect and eliminate dermatitis-prone industrial workers from extra-hazardous operations.

6. Use patch tests to determine sensitivity in selected cases.

Finally, it would fall to the dermatologist to provide the co-ordination and education without which such a program must fail. His is the task of educating the nurse, safety man, engineer, and aid men in the use of cleansing agents, protective creams, and clothes. He must teach these principles in such fashion that they will in turn indoctrinate the men and women under them in the same principles. The plant worker must be taught that the early lesions or irritation is the most successfully treated disorder. His is the task of supplying the ounce of prevention which will make the pound of cure unnecessary. *The principle must be learned that preventive dermatology is much more effective, pleasanter and cheaper than corrective or therapeutic dermatology.*

When industry learns these principles and only then will the shameful waste of man-hours, the inexcusable discomfort and agonies of skin disorders, and the exorbitant cost of industrial skin-care be reduced.

1 Klauder & Gross. Arch. Derm. & Syph. 1951 1:1.
2 Hanfling, S. Journal Med. Soc. N. J. Aug. 1950 47:8.
3 Schwartz, L. Modern Trends in Dermatology pp. 253–254, 1948.
4 Handbook Diseases of the Skin, Sutton and Sutton p. 86, 1951.
5 Schwartz, L. Modern Trends in Dermatology pp. 253–274, 1948.
6 Schwartz, L. Modern Trends in Dermatology, p. 259.

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As a convenience to executives, the new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. The catalogs, data sheets and technical bulletins reviewed here present the latest information on protective and maintenance products and equipment. Use the Reader's Inquiry Coupon.

FIRE PROTECTION

New Developments in Safety Shoes N-201
Hy-Test Div., International Shoe Co. Of unusual interest is this 6-page folder, "Keeping Pace with Progress in Shoemaking and with the Needs of Workers in Industry," which presents information on two recent safety shoe innovations, the Winguard steel box toe and the Bal Tan leather insole. Also shown are five shoe styles incorporating these features, a new plain-toe safety shoe style and recent changes in the stock numbers of Hy-Test shoes.

Asbestos Protective Clothing N-202
Zagma Asbestos Products. A well illustrated 8-page catalog offers several styles of gloves, mittens, hand pads and sleeves, both lined and unlined, and in various cuff lengths. These asbestos protectors shield wearers against fire and heat. Also described are asbestos finger cots and aprons.

Filter Mask N-203
The Goggle Parts Co. This illustrated bulletin highlights the features of the improved Flex-A-Foam filter mask. Newly designed for increased comfort and efficiency, the washable-filter respirator offers protection against non-toxic nuisance dusts.

New Unigoggle N-204
Jackson Products. A one-cup headrest goggle is described and illustrated in a 1-page bulletin. Made expressly for gas welding, flame cutting and brazing operations, the Unigoggle is shown in its headrest and in-use positions. The bulletin includes diagrams and charts of the replacement parts.

PERSONAL PROTECTION

Rate Compensation Thermostats ... N-205
Fenwal, Inc. A new principle in fire detection is explained in a 4-page illustrated brochure. Described are both the horizontal model and the explosion-proof vertical model thermostats which are designed to give instant response when the temperature reaches a predetermined danger point because of fire. Cut-away drawings and charts give full details on these UL and FM approved products.

Fire-Resistant Wallboard N-206
Certain-teed Products Corp. An illustrated folder on Firestop Bestwall, a gypsum wallboard with improved fire-resistive properties, lists the uses, advantages and UL ratings of the product. Drawings show where Firestop should be used in buildings.

POWER PRESS SAFETY

Magnesium Safety Tongs N-207
Magline, Inc. The safety and production advantages of magnesium tongs for press and shear feeding are described in an illustrated 2-page bulletin. Various styles are shown with complete data concerning handle and jaw dimensions.

Guide Pin Covers N-208
Central Safety Equipment Co. An illustrated 2-page bulletin outlines the correct method for measuring pins and bushings for Elasticone Guide Pin Covers, the spirally wound flat-steel protective coverings. This data sheet includes current prices, stock numbers and sizes.

Automatic Unloader for Presses ... N-209
Sahlin Engineering Co. The advantages of automatic unloading of power presses with the Sahlin "Iron Hand" are described and illustrated in a new 8-page catalog. It shows how the device, available in three sizes, can be adjusted to different widths, heights, jaw travel and distance, and angle of swing. Installation and operation instructions and parts lists are included.

FIRST AID EQUIPMENT

Folding Stretchers N-210
The Washington Motuary Supply Co. Catalog No. 4 includes items of interest to industrial first aid personnel, rescue squads and civil defense teams. Pictured and described in detail are light-weight folding emergency stretchers with or without legs and wheels, ambulance cots, and folding stretcher-chairs.

PLANT MAINTENANCE

Penetrating Protective Coatings ... N-211
The Wilbur & Williams Co. A 4-page technical folder serves as a quick-reference index for selecting the most suitable coatings for rust prevention, chemical corrosion, and dampness. Included are problems of metal painting, interior walls, concrete floors, exteriors, chemical corrosion, fungus, high temperatures, etc.

All-Purpose Cleaner N-212
Chemical Detergents Co., Inc. This bulletin features the characteristics and uses of Planisol, a non-caustic all-purpose industrial cleaner which requires no special precautions, protective clothing or neutralizer. A valuable chart shows the concentrations suitable for removing various types of soil from metal, glass, concrete, machinery, painted surfaces, tile, etc.

Flinthard Repair of Floors N-213
Paramount Industrial Products Co. Complete technical data, application hints and maintenance suggestions for using Flinthard in the repair or resurfacing of floors is provided by this bulletin. This ready-mixed product resists oil, grease, acids and moisture, and is suitable for laundries, foundries, bottling plants, refineries, mills, etc.

NOISE CONTROL

Silencers for Noise Elimination ... N-214
Industrial Acoustics Co. The problem of industrial noises and their control is the subject of a new pamphlet which shows the use of noise-filtering materials for air conditioning systems, compressors, diesel engines, generators, machinery, etc. The pamphlet illustrates the principles of noise measurement and how noise is related to the human ear.

ELECTRICAL EQUIPMENT

Make or Bread Line Connections .. N-215
A. B. Chance Co. This bulletin describes the tools and methods for linemen to make or break line connections under load without arcing, pitting or burning the conductor. Carefully explained pictures show each step in the use of the tools.

TRANSPORTATION SAFETY

Emergency Warning Signals N-216
Emarco Corp. Dramatically illustrated, this 4-page bulletin offers full details on the Thoro-Flare emergency flashing light. U.L. approved, the battery-powered warning light is shown in various applications, such as trucks, boats, trains, construction, police, utilities, etc.

SAFETY TOOLS

Chisel Grip N-217
Rose Mfg. Co. A 1-page bulletin describes the safety features of the Safe-Hi grip, which is designed to hold chisels, punches, lettering dies, test tubes, etc. without endangering the fingers. The folder points out that in addition to its safety advantages, the grip permits faster and more accurate work, even in less accessible places.

Freightcar Tools N-218
Safety First Supply Co. This 1-page bulletin describes and illustrates two safety tools for railroad and industrial workers. The first is a rail clamp for use on loading platforms, cars on grade, sidings, traveling cranes, etc. to prevent movement and derailment of the car. The second is a safety friction wrench for use on hopper car doors, so designed that the handle cannot spring up and injure the worker.

CHEMICAL & LABORATORY EQUIPMENT

Acid-Resistant Equipment N-219
American Agile Corp. This 4-page illustrated folder offers a number of fabricated plastic products for handling chemicals, such as bottles, jars, funnels, piping, valves, pipe fittings, tank liners, etc. Of interest to the chemical, food, electrical, pharmaceutical, brewery, tanning, paper and printing industries, the folder includes tables showing the physical and chemical properties of the thermoplastic resin used.

Gas-Analysis Manual N-220
Fisher Scientic Co. A new 60-page edition of a reference manual brings up to date information on gas analysis equipment. It includes procedures of analysis and complete instructions on maintaining and operating the equipment.

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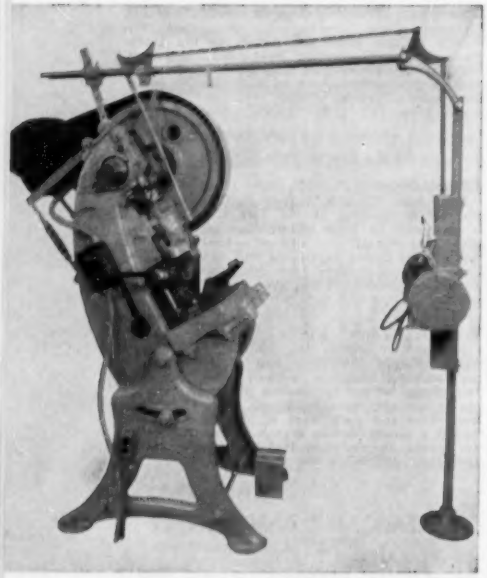


PULL-OUT GUARD

THE Guarding Co., of Illinois, has announced the perfecting of a guard for second-forming punch press work. The guard will materially increase output with safety and can be maintained at a very low operating cost.

Called the "Sentinal," the guard utilizes cords attached to the operator's wrists to remove the hands from the danger zone. The company states that every time the ram descends the hands are pulled away, whether from repeat or otherwise. The adjusting of the pull-out, being made at the level of the die, can be accomplished in seconds. The manufacturer also claims that, compared with other types of press guards, the Sentinal offers more favorable features and fewer unfavorable limitations. The company guarantees that it will earn its cost several times a year over many types of guards.

In addition to its ram control and easy adjustment features, the guard offers no obstruction to feeding, enables maximum output, and makes injury from mechanical repeat impossible. For further details, send in the coupon.

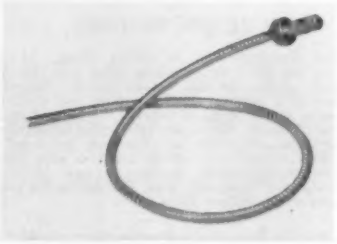
NEW DRY CHEMICAL EXTINGUISHER

NEW, 20- and 30-pound capacity lightweight, stainless-steel, dry chemical fire extinguishers have been announced by The Buffalo Fire Appliance Corporation of Ohio. Advantages of this new stainless steel dry chemical fire extinguisher are its extreme light weight and maneuverability which allows the operator to reach the seat of the fire without any lost motion. It also is said to have a longer range than comparable models.

This new extinguisher with finger tip control, shoots a chemical heat-insulating cloud up to 20 feet—snuffing out flames

on contact. The Buffalo dry chemical used in this new stainless steel fire extinguisher produces 1100 times its volume in non-toxic, flame-killing gas on contact with flame.

This extinguisher gives instant protection against B and C class fire hazards. It is Underwriters' Laboratories approved and exceeds their requirements in efficiency. Further details are available by sending in coupon.



FLAME FAILURE SAFEGUARD

THE Combustion Control Corporation announces a new and revolutionary series of FIREYE Flame Failure Safeguards and Programming Controls. Series FP Controls offer to industry for the first time a photoelectric flame failure safeguard which can "see" all types of flames (gas, oil, pulverized coal) and protect against the hazard of explosion.

The Scanner of Fireye FP Systems is the Firetron Tube, a new photo-conductive cell which gives instantaneous and positive response to flame failure. Drastically compact, it is installed in a short length of ½" standard pipe located where its sensitive cell can scan the flame area. This simple scanner replaces both flame rod and photo-electric scanner, reducing installation and servicing problems.

The scanner and control equipment monitors the complete firing cycle from pre-ignition purge through post-fire purge. It checks the pilot and the establishment of the main flame; then stands guard throughout the complete firing period. Its fail-safe circuits prevent operation under unsafe conditions and cause immediate shut-down in the event of component failure.

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WATCHCLOCK FOR PLANT PROTECTION

A PORTABLE watchclock that solves the problem of weekend and long holiday shutdowns is manufactured by the Detex Watchclock Corporation, of New York. Known as the Detex "Guardsman," the clock is approximately 6" in diameter and 2¼" thick. It furnishes an embossed record on a continuous roll of tape, and has a capacity for a full two weeks' night and day registration without any possibility of an overlapping record. The clock is equipped with a tape cutter to cut off daily records or any other interval as desired.

The "Guardsman" has an 11-jewel 8-day movement, especially designed for the hard usage to which watchmen's clocks are subjected. The tape is 1⅞" wide and

one side is perforated with ⅛" holes which engage in pins on the dial carrier. The dial carrier is synchronized with the movement to provide correct time of registrations. Each hour of the day has its own ruled line on the tape. This permits easier reading of the registrations.

The movement and mechanism are enclosed in an aluminum die-cast case, protected by a reinforced leather pouch with shoulder carrying straps of top grain harness leather. A new type of heat-treated glass crystal is used which is non-breakable and will not discolor with age. An aluminum shutter to protect the keyhouse from moisture and dampness is firmly fastened to the leather pouch. The "Guardsman" has the approval of the Underwriters' Laboratories and Factory Mutuals. For further details and information on this new development, send in the coupon.

ALL-PURPOSE PLASTIC APRON

THE Akro-Mils, Inc., of Ohio, has recently introduced the "Miracle Plastic" apron to their full line of plastic specialties. This new light-weight, heavy-duty apron is reinforced with brass grommets at points of strain and all edges are finished with a heavily stitched hem. "Miracle Plastic" aprons fill the needs of mechanics, foundrymen, platers, machinists, meat packers and others requiring

protection from acids, chemicals, solvents, grease, water, etc.

The apron, made of 16 gauge Goodyear Vinyl material, is available in the medium size, 29" wide and 35" long, or the large size, 35" wide and 45" long. When soiled, it may be wiped clean with a cloth eliminating the expense and bother of laundering. For details, use the coupon.

METAL DRUM SAFETY VALVE

A NEW safety valve designed to effectively control and eliminate dangerous explosions caused by pressure expansions in 50 gal. metal drums, has been introduced by its manufacturer, Central Safety Equipment Company, of Pa. The body of the "VENTADRUM" is manufactured of bronze and has 23 functioning parts which require no adjustments or replacements throughout the life of the valve. The valve measures approximately 3½" high and there are no tools needed for installation.

The automatic functioning of this new safety valve permits air to enter the drum on contraction of liquid or while liquid is being extracted. It allows air to escape slowly during the expansion of liquid caused by normal temperature changes and relieves excess pressure rapidly in the event the container becomes involved in fire or a quick temperature change. Other safety features include integral fire screens and automatic sealing in the event the container turns over. For details, please send in coupon.

CLIP-ON SAFETY GOGGLES

THE Pennsylvania Optical Company has added to the line of Penoptic safety products by introducing clip-on goggles for industrial workers who wear prescription safety or welding glasses.

The new clip-ons will be welcomed by workers whose costly prescription safety or welding glasses frequently become scratched or damaged on the job by sparks or flying bits of metal. The new type goggles are made to protect the more expensive lenses. They are exceedingly light in weight and will fit over either shell or metal framed glasses.

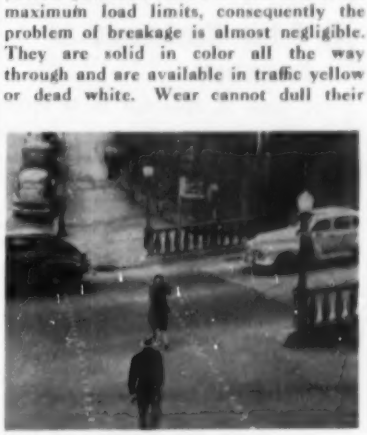
The Penoptic clip-on lenses are made of clear glass or extra dark absorptive glass. They are available in 44 MM and 46 MM sizes. The lenses are precision ground and polished so they will not distort the image which the wearer sees through his prescription glasses and the clip-ons.

The clip-on goggles are so constructed as to enable the purchaser to replace either lens if necessary. For further details, send in coupon.

PLASTIC LANE MARKER

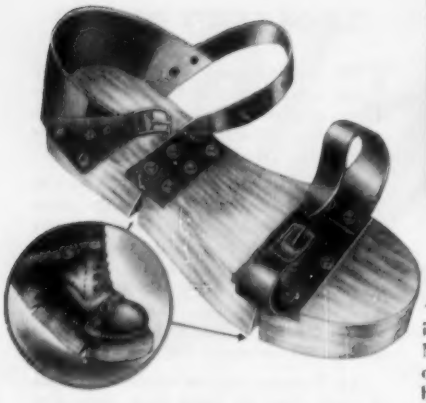
THESE new tenite plastic markers are quick and easy to apply to any type of street surface and require no further attention, during the life of the marker which is four to six years. The Dur-O-Line Marker is a simple plastic saucer-shaped disc 4½" in diameter. They are usually spaced about 2 feet apart to make a well defined traffic lane.

The marker will withstand 63,000 pounds pressure, which is well above the maximum load limits, consequently the problem of breakage is almost negligible. They are solid in color all the way through and are available in traffic yellow or dead white. Wear cannot dull their



original brightness. Two average workers can lay 100 markers per hour and cars can run over them as soon as they are down.

The Dur-O-Line Street Marker is manufactured by the Traffic Safety Supply Company, of Oregon. Complete details and information may be obtained by sending in coupon.



WOODEN SOLE STRAP-ON SANDAL

A NEW "HOT FOOT SANDAL," made of one-inch thick seasoned wood, is announced by Reece Wooden Sole Shoe Company, of Neb. The sandal comes in small, medium and large sizes and the durable leather straps render it fully adjustable enabling it to be strapped on over any shoe. Flexibility is obtained by the two strong leather hinges permanently secured to the sole with screws and washers.

According to the manufacturer, Reece "HOT FOOT SANDALS" are used by leading safety engineers for those hazardous jobs where no other sole can endure. The wood sole is non-conductive to heat or cold and is adaptable for use in factories, foundries, furnaces, ovens, on hot floors or where acids and oils are present. Further information on the new sandal is available by sending in the coupon.

January, 1952

To Safety Maintenance & Production

75 Fulton St., New York 38, N. Y.

For prices and complete details of items mentioned in this month's "What's New in Safety Products," check items that interest you and mail coupon.

- ☐ Pull-Out Guard
- ☐ New Dry Chemical Extinguisher
- ☐ Flame Failure Safeguard
- ☐ Watchclock for Plant Protection
- ☐ All-Purpose Plastic Apron
- ☐ Metal Drum Safety Valve
- ☐ Clip-On Safety Goggles
- ☐ Plastic Lane Marker
- ☐ Wooden Sole Strap-On Sandal
- ☐ Flexible Plastic Glove
- ☐ Telescoping Foam Tower

Firm Name .....

Attention of .....

Position .....

Firm Address .....

City .....

FLEXIBLE PLASTIC GLOVE

AS AN aid to laboratory technicians and others who work with precision instruments, The Milburn Company, of Michigan, recently announced the development of a new plastic glove for better handling of minute objects. Demonstrating greater flexibility than any other plastic glove available heretofore, according to the manufacturer, it represents the most recent addition to their PLYGLOV line. Because of its light-weight base Jersey Fabric, the new glove has proved completely successful in handling laboratory utensils and other small parts having no more than ¼-inch diameter. The gloves come either full or palm coated, and retain less absorption of odors, oils and water than neoprene, rubber or other plastics.

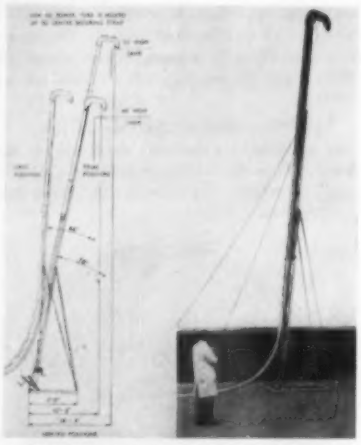
Adapting the characteristic durability of the Milburn PLYGLOV line, this newest member has shown a tear strength that is equal in abrasive resistance to heavier canvas-base plastic-coated gloves. Known as model number 2114, the Jersey Gloves are available in a snug full-size custom style, in both ladies' and men's sizes. They are easily laundered, low priced. Free samples and full details may be obtained by sending in the coupon.

NO-MIST PREVENTS FOG

A NEW and economical anti-fogging and lens cleaning solution has been developed for use on glass and plastic surfaces. The invisible coating is non-streaking and resists the formation of fog or moisture particles caused by humidity, body heat or temperature changes.

Called "NO-MIST," one application of the liquid will provide anti-fog protection for 24 hours. It may be applied by hand or by means of a convenient sprayer attached to the bottle. Available in 8-ounce bottles, the product is being packaged for extra safety in plastic as well as glass bottles by Carol Chemical Products, Inc.

By simply applying NO-MIST at the beginning of each day and wiping with a soft cloth or tissue, workers in the most difficult atmospheric conditions can keep their glasses, faceshields, respirators and hoods clear, safe and comfortable. For details, use the coupon.



TELESCOPING FOAM TOWER

AN ENTIRELY new portable device for discharging fire-smothering foam into a burning oil tank has been announced by Pyrene Manufacturing Company, of New Jersey. This equipment, called a Pyrene Foam Tower, claims the advantages of mobility over rough terrain, ease and speed of erection by three or four men and efficient delivery of large volumes of foam onto tanks up to 50 feet in height.

This equipment is assembled in two sections: a base with unique screw-tilting gear mechanism and four spikes for use in case of rough ground; and a telescoped 20-foot, three-section tower with manual winch, two swivel-jointed push poles and stainless steel guy ropes. A six-inch foam column ends in a heat-resistant stainless steel discharge head. The tower is light and compact. Made principally of aluminum it weighs only 475 pounds.

It may be quickly and easily assembled in a few minutes. A built-in or a forcing-type foam maker with water capacity of 300 gpm makes 2000 to 3000 gpm of Pyrene air foam. A tilting mechanism simplifies the application of foam for, with the base in a stationary position, the discharge head can be moved forward 3 to 5 feet over the tank edge to discharge foam against the inner side of the tank.

The manufacturers recommend this equipment for the protection of all storage tanks in an area where fixed foam systems are not installed or where such systems may have been damaged by explosion. Such protection is particularly required for floating roof tanks which do not usually have system protection. For details, use the coupon.

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Hydrogen chloride, 72 July
Hydrogen sulphide, 63 Nov., 66 Dec.
Hydroquinone, 66 Dec.
"How of Small Plant Maintenance, The", by W. C. Zinck, 42 Oct.
"How to Clean Chrome Tanned Leathers", 61 Oct.
"How To Cut The Cost of Motor Maintenance", by K. C. Mobarry, 32 Nov.
"How to Get Top Tire Performance in Sand", 44 Nov.
"How to Load a Skid", 58 Nov.
"Hypersensitivity",
To Antibiotics, 68 Sept.

I.S.E.A. Elects, 44 Sept.
Illinois Accident Rate, 47 July
Illumination,
Miner's Lamps, 30 July
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"In England", 63 July
Incandescent lamps, 25 Dec.
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"Industrial Defense" by Horatio Bond, 11 Dec.
Industrial health,
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Industrial Hygiene, by Jacob A. Goldberg, 54 July, 60 Aug., 62 Sept., 86 Oct., 63 Nov., 60 Dec.
Industrial Hygiene Foundation, 16th Annual Meeting, 89 Oct.
Industrial Lighting,
"Keep Your Lights Clean", 28 Oct.
"New Lighting For Textile Mills", 18 Nov.
"Plan Your Lighting", 24 Dec.
Industrial medicine,
For better training in, 65 Aug.
"Industrial Nurse, The", by Rosamond J. Webster, 61 July, 68 Aug., 68 Sept., 91 Oct., 67 Nov., 67 Dec.
"Industrial Nurses Required", 92 Oct.
Industrial Nursing in Australia, 68 Dec.
Industrial Recreation Conference, 89 Oct.
Industrial Sickness Absenteeism, 68 Dec.
"Industrial Tape Adheres to Safety", 14 July
Industrial Truck Association, 59 Aug.
"Industrial Truck Safety Standards", 52 Aug.
Industrial trucks,
Battery size, 34 Sept.
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Safe handling of batteries, 76 Oct.
Industrial Worker,
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Insurance costs down, 32 Aug.
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"Interpersonal Relationships", 69 Aug.
"Invisible Light for Protective Lighting", 47 Aug.
"Ironic Contrast, The", 6 Dec.

"Jammed Safety Congress Pledges All-Out Aid To Production", 17 Nov.

Job training films, 20 Dec.

Kaclinite, 44 Oct.
"Keep Tools in Good Shape", poster, 23 Aug.
"Keep Your Lights Clean", by G. S. Ketter, 28 Oct.
Kerosene,
  Hazards, 58 Sept., 64 Aug., 30 Nov., 60 Dec.
  Pan fire, test, 22 Nov.
Ketter, G. S.,
  "Keep Your Lights Clean", 28 Oct.
"Key to Perfect Safety", 45 Dec.
Kiefer, Fred P.,
  "Help for the Accident Prone", 21 Oct.
"Knowledge Must Be Applied", 10 Aug.
Koeth, Frederick J.,
  "Blindness Lasts a Long Time", 18 Aug.

Laboratory hazards, 75 Nov.
Lack of inspection, accident, 50 Nov.
Ladder Company, new name for, 52 Dec.
Ladders,
  Safe use and selection, 23 Dec.
Latex, 66 Dec.
Lauderdale, Robert A.,
  "Reducing the Radioactivity of Contaminated Water", 40 Oct.
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  Corrosion rate, 57 Dec.
"Learning The Hard Way", 56 July, 66 Aug., 66 Sept., 72 Oct., 50 Nov., 58 Dec.
Leather, chrome tanned,
  How to clean, 61 Oct.
Legge Appoints, 64 Oct.
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"Lens Coating Licensed to A.O.", 53 July
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  "Keep Your Lights Clean", 28 Oct.
  "New Lighting For Textile Mills", 18 Nov.
  "Plan Your Lighting", 24 Dec.
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"Lighting and The Nation's Welfare", report, 36 Aug.
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Linoleum floors,
  Care of, 20 Aug.
Linseed oil, fire hazard, 58 Sept.
Lippincott, Lincoln H.,
  "Safety in High Places", 23 Dec.
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  Brake Service manual, 36 July
  Civil Defense manual, 32 July
  Cleaning mobile tanks, manual, 42 Aug.
  Emergency water supplies, manual, 78 Oct.
  Fire and Atomic Attack, 42 Dec.
  Industrial Health & medical program, 68 Aug.
  Lighting, report, 36 Aug.
  Mining problems, book, 83 Oct.
  Motors, explosion-proof, bulletin, 56 Nov.
  Prevention of cotton fires, report, 32 Aug.
  Smoke Eaters' manual, 32 July
  See also "Bulletins and Catalogs, Free"
Lobos, Z.,
  "CBM . . Split-Second Fire Fighter", 20 Nov.
Logging,
  Safety in herding logs, 32 Sept.
Long Island City Aids Employee Safety Meetings, 60 Oct.
Look, Allen D.,
  "Visual Aids to Safety", 18 Dec.
"Look Out For The Imps!", 48 Aug.

"M.I.T. Guards Its Health", 63 Nov.
McClellan, Robert,
  "New Lighting for Textile Mills", 18 Nov.
McDonald Plant Debut, 50 July
McGowan, Robert M.,
  "Safety Engineering In a Nutshell", 15 Sept.
Machine vibration, reducing, 16 Sept.
Magnesium, 52 Nov.
Magnesium chloride, 36 Dec.
Magnesium fires, 75 Nov.
Magnesium Flare Fires, 68 Oct.
Magnesium metal, prevents corrosion, 57 Dec.
Magnesium oxide, 36 Dec.
Maintenance,
  Electric motors, 32 Nov.
  Exhaust systems, 29 Sept.
  Floors, 18 July, 15 Dec.
  Fluorescent lights, 34 Oct., 31 Dec.
  Lighting equipment, 28 Oct., 25 Dec.
  Linoleum floors, 20 Aug.
  Mobile scaffolds, 28 Aug.
  Preventive, 32 July
  Program, 36 July
  Small plants, 15 Aug., 36 Sept., 42 Oct.
"Maintenance Problem of the Small Plant, The", by W. C. Zinck,
  "the How of Small Plant Maintenance", 42 Oct.
  "the Where, When and How", 36 Sept.
  "the Why and What", 15 Aug.
"Maintenance Problems To Be Discussed", 32 Dec.
Maintenance Show, 52 Sept., 6, 32 Dec.
"Make Rugged Floors Rugged", by Edward S. Wilton, 18 July
Manpower conservation, 69 Dec.
"Manpower Salvage", 70 Nov.
Manpower supply concern, 71 Sept.
Marine safety,
  Testing corrosion, 74 Dec.
Matches, fire hazard, 58 Sept.
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  Improper, 88 Oct.
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  Skid-loading, 58 Nov.
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"Medical Programs in Industry", 68 Aug.
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Mercantile Buildings, Fire hazards of, 58 Sept.
Mercury, toxic, 63 Nov.
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  Prevented by electrolysis, 57 Dec.
Metcalfe, Lyne S.,
  "Production Jitters", 16 Sept.
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Methylene chloride, 20 Nov.
"Midwest Safety Show Features Exhibit", 13 July
Mine First Aid Winners, 60 Nov.
Mine Rescue Contest, 51 Sept.
Mine ventilation, 46 Dec.
"Miner's Lamps For The Moth-Ball Fleet", 30 July
Mining Problems, book, 83 Oct.
Mobarry, K. C., "How To Cut The Cost of Motor Maintenance", 32 Nov.
"Mobile Scaffolds Aid Maintenance", by Edwin J. Beinecke, Jr., 28 Aug.
Mobile tanks,
  Manual on cleaning, 42 Aug.
Montmorillonite, 44 Oct.
Moore, John B.,
  "New Solvent Remains Stable", 30 Nov.
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  "Dual Role for Fusible-Catch Fire Door", 38 Oct.

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Naphthalin, 70 Aug.
National Safety Congress, 12 Oct., 17 Nov.
Naval vessels,
  Fire extinguishing agents, 30 Oct., 20 Nov.
  Safety in maintenance, 30 July
"Neuroses in Industrial Workers", 67 Dec.
N.Y.U. Safety Courses, 43 Sept.
New employee indoctrination, 26 Nov.
"New Lighting For Textile Mills", by Robert McClellan and W. T. Watson, 18 Nov.
"New Solvent Remains Stable", by John B. Moore, 30 Nov.
Night driving,
  Headlight modifications, 44 Nov.
  Visibility, 38 Dec.
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Nitrites, 58 Sept.
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Nocar, Charles J.,
  "Drown Those Decibels", 62 Dec.
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"Non-Slip Floors Lower Costs", 32 August
Nuclear-sulfonic polystyrene type resin, 44 Oct.
"Nutrition in Industry", 93 Oct.

Oberly, Chester C., 52 Dec.
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Occupational Vision Conference in Atlanta, 34 Dec.
Off-the-Ground Safety,
  "Safety in High Places", 23 Dec.
Oil Absorbent, Lighter, 74 Oct.
"Oil Company Reduces Eye Injury Costs", 39 Nov.
Oil Safety Record, 51 July
"Old Films Have Hot Footage", 28 Dec.
Olson, C. R. "Bob", promoted, 38 Nov.
"On the Defensive", 44 Nov.
"On The International Scene", 63 July
O'Regan, James F.,
  "Fighting Fire With Foa", 18 Sept.
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  Safety measures for, 48 Aug.
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"Pacesetter in Safety", 44 Oct.
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"Pallets Aid Transportation and Warehousing", 39 Sept.
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Parrott, Capt. J. N., Retires, 50 Aug.
Pennsylvania Optical Co.,
  To market own lenses, 52 July
Perchloroethylene, 46 Nov.
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  Accident-prone, 21 Oct.
  Difficulties, 92 Oct.
  Fatigue, 68 Nov.
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"Pest Control In The Food Industry", by R. Lawrence Brett, 25 July
Petroleum industry,
  First Aid and safety, 36 Oct.
  Safety planning, 22 July
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Phosphates, 26 Sept.
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"Plan Your Lighting" by Robert L. Zahour, 24 Dec.
"Planned Program for Safe Driving", 37 July
Plant Maintenance,
  Show, 52 Sept., 6, 32 Dec.
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    "Maintenance Problems"
"Plant Safety Vital to Defense", 50 August
Plant Sanitation,
  "Pest Control in the Food Industry", 25 July
Plastic eye protection, 48 July
"Plastic Film Aids Mine Ventilation", 46 Dec.
"Plastic Panels Add To . . Safety Maintenance and Production . . in Flour Milling", 36 Nov.
Plexiglas, 36 Nov.
Poor design, accident, 72 Oct.
"Poor Sports on the Road", 38 Dec.
Posters, safety,
  Avoid Injuries! Keep Tools in Good Shape", 23 Aug.
  Cuts, Burns, and Infection, 20 July
  "Have Your Eyes Examined!" 23 Nov.
  "Horse Play's O.K. at the Circus", 21 Dec.
  "Keep Your Mind on the Job", 23 Sept.
  "Unguarded Machines Can Maim Too!", 25 Oct.
Power generating plant,
  Thermal insulation, 54 Nov.
Power press guards, 22 Oct.
"Preventive Maintenance", 32 July
  For trucks, 36 July
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  By company medics, 66 Dec.
  Taking stock, 69 Dec.
Pring, R. T.,
  "Exhaust Systems Can Get Exhausted", 28 Sept.
Production aid,
  Lighting, 24 Dec.
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    "Maintenance"
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"Production Jitters", by Lyne S. Metcalfe, 16 Sept.
Propane,
  Hazard, 58 Sept.
  Storage and handling, 39 Dec.
"Protection for Women Workers", 25 Nov.
"Protection From Sparking", by R. Hoff, 27 Aug.
Protective clothing, importance, 60 July
  See also "Safety programs"
"Protective Hand Creams", 62 Aug.
Protective Lighting,
  Invisible lighting, 47 Aug.
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Pyroxylin plastic materials, hazards of, 58 Sept.
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  Detectors, 58 Aug., 60 Oct.
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  Reducing water contamination, 40 Oct.
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Radiological Safety Group, 63 Nov.
"Radioactive Wastes", 58 Nov.
"Reassurance by Reference", 61 July
"Rebate from Eye Safety", 22 Aug.
Recognition for Safety and Service, 38 Dec.
"Reducing the Radioactivity of Contaminated Water" by A. H. Emmons and Robert A. Lauderdale, 40 Oct.
Rehabilitation of worker, 71 Sept., 90 Oct., 70 Nov.
Research laboratory, 22 July
"Respirators For Farmers Too!" 86 Oct.
Respiratory Illness, 69 Nov.
"Retirement—When?", 70 Sept.
"Rhino Has Poor Vision, The", poster, 23 Nov.
Rodent control, 48 July
Rogers, W. T., Named Director for I.A.S.C., 66 Oct.
Roof accident, 58 Dec.
Rubber loss,
  Fall River fire, 40 Nov.
"Safe Guards for the Power Press", by George Stiles, 22 Oct.
"Safe Handling of Batteries", 76 Oct.
"Safeguards for Propane-Bus Terminal", 39 Dec.
Safe-Line Clamps, New Owners for, 41 July
Safety bulletin boards, 20 Dec.
Safety Center, 53 July
Safety clothes, need for, 66 Dec.
Safety Clothing & Equipment Co. Moves Into New Factory, 55 Nov.
Safety Conference & Award for Alaskan Army Units, 49 August
Safety conferences,
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Safety Congress,
  Preview, 58 Sept.
  Report of, 17 Nov.
Safety Consulting Group, 59 Oct.
Safety Devices for Still House, New, 80 Oct.

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Safety Engineering, Master's Degree in, 46 July
"Safety Engineering In a Nutshell", by Robert M. McGowan, 15 Sept.
Safety Engineers,
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"Safety Glasses Given to 3300 Otis Workers", 54 Dec.
Safety goggles, 21 July
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Safety hat, prevents injury, 67 Sept.
Safety helmet, injury avoided, 51 Nov.
"Safety Impossible Without Visibility", 38 Dec.
"Safety in Atomic Energy Plants", 56 Aug.
"Safety in High Places", by Lincoln H. Lippincott, 23 Dec.
Safety Institute, 43 August
"Safety Is UN-Saturated", 27 July
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Sanitary engineer importance, 63 July
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"Four Steps (or less) for the Care of Linoleum Floors", 20 August
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Schamel, W. S.,
"Exhaust Systems Can Get Exhausted", 28 Sept.
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Force in safety movement, 17 Nov.
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Shapiro, Harry,
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Shea, James R., Sr.,
"What To Do About A Stymied Safety Program", 25 August
Silicosis prevention,
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"Sinclair Plans For Tomorrow", 22 July
"Sign Of Safety, A", 26 Nov.
16th Annual Meeting Industrial Hygiene Foundation, 89 Oct.
Skid-loading safety, 58 Nov.
"Skill and Age", 68 Nov.
Skin Protection,
"Cutting-Oil Dermatoses", 55 July
"How to Select a Skin Cleanser", 25 Sept.
"Protective Hand Creams", 62 Aug.
Slips and Falls, Controlling, 15 Dec.
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Small arms ammunition, 58 Sept.
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"Smokeless Smoke Stacks", 62 Sept.
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"Snow Melting Systems", 45 Nov.
Social welfare by government,
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Sodium bicarbonate, fire extinguisher, 12 Dec.
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Sparking, protection against, 27 Aug.
Spontaneous ignition of old films, 28 Dec.
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Staples, L. W.,
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Stiles, George,
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"Stymied Safety Program, A", 25 August
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"Summer Hazard", 10 Aug.
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Synthetic Rubber, Hazards of, 60 Dec.
"Take a Rest", 68 Nov.
"Taking Stock", 69 Dec.
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10 Steel Foundries Set Safety Mark, 50 Dec.
Tetraethyl pyrophosphate, 88 Oct.
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Thornton, Frank, Jr., Retires, 44 Sept.
Tokheim Executive Dies, 52 Dec.
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"Hazardous substances"
Tinker Air Force Base, 34 August
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"Traffic Jams in Plant Parking Lots", 52 Oct.
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Trailmobile Trophy award, 38 Dec.
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"Training Leads to Award, Tinker Air Force Base", 34 August
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"Treatment of Eye Injuries", 64 Sept.
Treesdale Lab. Appoints, 33 August
Trichloroethylene, 46 Nov.
Troy, William A., appointment of, 64 Oct.
Trucks,
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Unlabeled Extinguishers, 34 July
"Up in Smoke", 8 Nov.
Vaughan, J. E.,
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Vehicle Inspections, 52 Oct.
Vehicle Maintenance Study, 38 Dec.
Ventilation,
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Garages, 39 Aug.
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Vermiculite, fire resistant material, 56 Nov.
Vibration, decreasing, 16 Sept.
"Vigilance Against Aggression", 10 Sept.
Vinylite plastic film, 46 Dec.
Visibility,
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"Visual Aids to Safety", by M. L. Williams and Allen D. Look, 18 Dec.
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Warehousing,
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Warfarin, 48 July
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Emergency supplies, 78 Oct.
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"Water Bulldozer for Herding Logs", by Albert Arist, 32 Sept.
Water, contaminated,
How to reduce radioactivity in, 40 Oct.
Water damage, to decrease, 36 Dec.
Water fog, 19 Sept.
Water removal, 37 Dec.
Water-ethylene solutions, 45 Nov.
"Waterproofing of Floors To Prevent Damage", 36 Dec.
Watson, W. T.,
"New Lighting For Textile Mills", 18 Nov.
Webster, Rosamond J.,
"The Industrial Nurse", 61 July, 68 August, 68 Sept., 91 Oct., 67 Nov., 67 Dec.
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Welcome "Safety Standards", 12 October
Welding,
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"Well State, The", 62 July
Westinghouse safety records, 49 Nov.
Wetting agents, 22 Sept.
"What Lighting Can Do", 36 Aug.
"What Size Battery Does Your Industrial Truck Need?", by J. E. Vaughan, 34 Sept.
"What To Do About A Stymied Safety Program", by James R. Shea, Sr., 25 August
What's New . . .
Bath towels, paper, 72 Nov.
Can tilter, 67 July
CO Self-rescuer, 73 Aug.
Chemical safety shoes, 74 Nov.
Civil Defense light, 74 Aug.
Cleaning unit, All-purpose, 71 Dec.
Cover plate, new type, 72 Nov.
Detergent, non-caustic, 72 Sept.
Drop lock dock board, 94 Oct.
Dust hood, lightweight, 73 Aug.
Dust mop, germicide, 67 July
Dust respirator, new, 71 Dec.
Extinguisher, CBM, 70 Dec.
Extinguishers, Dry chemical, 72 Nov.
Extinguisher, small dry chemical, 67 July
Eye Shield, Jumbo, 94 Oct.
Face shields, 64 new, 71 Dec.
Fatigue retarding mat, 73 Nov.
Filter mask, new, 74 Aug.
Fire detector, new type, 73 Sept.
Fire ladder, rolling, 73 Nov.
Firm-grip grating, 71 Dec.
Floor cleaner—bactericide, 65 July
Floor cleaner, deodorizer, 74 Sept.
Floor engineering service, 72 Aug.
Floor machine, explosion-proof, 73 Sept.
Floor scrubber, lightweight, 95 Oct.
Floor resurfacer, Quick-set, 94 Oct.
Floor seal, Plastic-type, 72 Dec.
Floorsafe reduces falls, 73 Nov.
Fluorescent mercury-vapor lamp, 94 Oct.
Fueling grounding cable, 74 Sept.
Germicidal cleaner, 95 Oct.
Glove, insulating, 66 July
Gloves, rough-palm plastic, 72 Aug.
Goggle, gas-tight, 72 Aug.
Goggle, new head-rest, 72 Dec.
Goggle pliers, 72 Sept.
Ground detector, 66 July
Hand and face dryer, new, 74 Nov.
Hand cleaner, waterless, 72 Dec.
Hand truck, light, 73 Aug.
Hard hat shock absorbers, 96 Oct.
Heat-reflecting foil cloth, 73 Nov.
Kick-back apron, 74 Nov.
Lane-marking tape, 73 Aug.
Lens, plastic cover, 96 Oct.
Lift truck, diesel-powered, 96 Oct.
Marquee service, 66 July
Mobile Medical Disaster unit, 72 Nov.
Motor-lift work tower, 72 Sept.
Neoprene oilace boot, 70 Dec.
Non-slip floor covering, 70 Dec.
Non-slip wax ingredient, 72 Aug.
Ox-bow magnet chain, 66 July
Oxygen unit, demand, 96 Oct.
Pallet roller, 74 Nov.
Press tongs, magnesium, 70 Dec.
Protective cream, 65 July
Protective glass coating, 73 Aug.
Punch Press Feeders, 96 Oct.
Radiation meter, portable, 74 Aug.
Respirators, chemical cartridge, 73 Nov.
Reversible coated gloves, 70 Dec.
Rope, non-conductive, 73 Sept.
Safety shoes stitched with new thread, 72 Sept.
Safety signs, 74 Sept.
Safety pliers, shatter-proof, 73 Sept.
Scaffolding end frames, 74 Sept.
Shelter packages, 96 Oct.
Shoes, Nurses' non-slip, 67 July
Soap dispenser, supersize, 95 Oct.
Solvent, new safety, 94 Oct.
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Temporary light, swivel-mounted, 65 July
Wallboard, fire-resistant, 72 Dec.
Water cooler, explosion-proof, 95 Oct.
Weld-Aid Lens, 66 July
Welder's goggles, new, 71 Dec.
Welding lens, reflecting, 73 Sept.
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Work scaffolds, adjustable, 74 Nov.
"When Is A Whole Ship Not a Hole Ship?", 74 Dec.
"Why and What" of maintenance, 15 Aug.
Williams, M. L.,
"Visual Aids to Safety", 18 Dec.
Wilton, Edward S.,
"Make Rugged Floors Rugged", 18 July
"Windowless Buildings", 61 Sept.
Wise Owls, 37 Aug.
"Wise Owls on the Increase", 30 August
"Wolf in a Jeep", poster, 23 Sept.
Women workers, protection for, 25 Nov.
"Workmen's Compensation Legislation", 70 Sept.
"Workmen's Compensation Problems", 90 Oct.
"Wrong Side Driving No. Two Menace", 38 August
Xylol, 60 Dec.
"You'll Have No Extra Skin", poster, 20 July
"Your Eyesight and Your Job", 16 Dec.
Zahour, Robert L.,
"Plan Your Lighting", 24 Dec.
Zinc, 65 Sept.
Zinck, W. C.,
"The Maintenance Problem of the Small Plant", 15 Aug., 36 Sept.
"The How of Small Plant Maintenance", 42 Oct.

4-Point Safety Program

(From page 42) notation stays there until the condition has been corrected. The mine foreman, as well as the shift foreman or crew foreman, try to correct conditions promptly.

Planning Conferences. This facility is used extensively for planning construction jobs, particularly when a shut-down of more than one department is involved. Top supervisors of each department involved get together and plan the job step by step. The plans are recorded and a copy is given to each person who is responsible for any phase of the job. One person is designated to be in charge of the entire job on each shift and any minor change deemed necessary must be cleared through this person before it is initiated.

Employee Training

Although there is no formal company-wide training setup, there is a sincere effort to see that each employee is properly introduced to the company, given proper job instructions, and is followed up to see that he has a reasonable working knowledge of the instructions. The new employee's training begins at the employment office where a history of his employment and experience is recorded for passing on to the one who will supervise his work. The company's general policies and practices as they concern him are explained.

In the Mining Department, his first contact is with the department head who spends from one to two hours trying to orient his attitude toward the company, department and the employees with whom he will work. Then for about three weeks he is placed under a training foreman who teaches him safety standards, first aid, and job performance in class room and under normal working conditions.

At the completion of the training period, he is given written and performance tests for judging his attitude and ability to absorb instructions and training. If this training shows him to be able and willing to cooperate and do the job, he is then given a certificate of achievement and assigned to a labor crew where he will work until promoted. The training foreman checks him for a period of time to observe his progress and to observe the foremanship of his supervisor.

When an employee is placed on certain jobs which require special skill in the use of tools or the operation of equipment, he is examined as to his knowledge and skill and given a certificate of competence if the examination is passed.

Supervisory Training. Training conferences are held occasionally as a clinic on foremanship for the purpose of reviewing the principles of good foremanship and to encourage improvements. Foremen have been grouped in various ways for these conferences, depending upon the nature and scope of the training. In some they have been grouped for their own convenience, in some they have been grouped by levels of authority, and in others along departmental lines. The conferences have been led by representatives of the State Department of Education, the U. S. Bureau of Mines, and the company safety department. Department heads usually attend the conferences for the help and inspiration they can give the foreman.

Safety Engineering Department

Prior to 1947, the safety department was a division of the personnel department and included a staff of two engineers and a part time secretary. During 1947, the management decided that its investment in safety engineering was spread too thin to be effective and plans were made for increasing the staff with young graduate engineers.

As engineers were being recruited and trained, new safety offices were being constructed and in 1949, the safety staff was separated from the personnel staff and made responsible to management, as a department of technical or professional safety engineering. At the present time the safety engineering staff includes six engineers and a secretary, with the following fields of engineering represented in the academic educational training of the engineers; chemical, civil, mechanical and mining. They maintain membership in their respective professional societies, the American Society of Safety Engineers and/or American Industrial Hygiene Association.

In order to keep the program in balance, a "safety service card" was designed for the engineers to use as a notebook for recording a specific service rendered another department. The reverse side of the page is useful for analyzing services by departments, nature of service, disposition of findings and reason for giving the service. Information is recorded on a wall sheet where data can be summarized, questions cross-compared and the actual services compared with the ideal.

The change in the status of the safety engineering department is proof of top management's faith in the principles of safety engineering as influential factors in providing progressive and efficient operations, as well as greater assurance of safe and healthful operations.

From an address presented at the 12th Annual Southern Safety Conference.

Fiftieth Anniversary

THE Williams Jewelry & Mfg. Company is well known throughout the country for its long and distinguished contribution to the safety movement as a manufacturer of safety awards, emblems, medals and trophies. The full extent of its service is made evident by an announcement that during the past year Clarence J. Williams has celebrated his fiftieth anniversary in the jewelry business. Entering his father's jewelry trade shop in 1901, he continued the industrial line in his own firm, Williams Jewelry & Mfg. Co., in 1928. The Chicago firm later expanded with two branches, The Peerless Bronze Works, and The Trophy & Metal Shop. Mr. Williams is now associated with his sons at their headquarters at 10 S. Wabash Ave., Chicago 3, Ill.

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